Volume XII.
Number 3.

MARCH 1897.

$2.00 Per Year.
20 Cents per Copy.

TEXTILE WORLD.

MAR 20 1897

With which is Incorporated the

INDUSTRIAL RECORD

The combined subscription of the Textile World and Industrial Record among textile manufacturing establishments is claimed to be larger than any other publication in this country, and comparison is invited.

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GUILD & LORD, Publishers, 620 Atlantic Avenue, Boston, Mass.

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PROVIDENCE, R. I.

Bleaching, Dyeing, Drying and Finishing Machinery.

Cotton, Paper and Husk Rolls.

TENTERING MACHINES

With Patent Self-Feeding Clips.

Patent Combination Rolls

—OR—

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Calenders, Mangles, Drying Machines, Tentering Machines, Hydraulic Presses, Etc.

—BEETLES—

Short and Long Chain Dyeing, Sizing and Drying Machines.

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SINCEING MACHINES.

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Bleaching, Printing and Dyeing **MACHINERY.**

Tentering Machines

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— FOR ALL KINDS OF —

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Patent Automatic Clamp, Spring Clamp, Pin Chain.

Special Attention is called to improvements recently made in the **VIBRATORY MACHINES,** namely:

Spur gear driving in place of bevel gear (patented).

Crank plate for vibrating in centre of machine with forked rod grasping shaft at two points, giving evenness of motion and saving floor space (patented).

Sectional guides for returning chain, and adjustable bearings, to take up slackness.

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Builders of

Cotton Machinery

OF EVERY DESCRIPTION.

Revolving Flat Cards,
Railway Heads
Ring Spinning Frames
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Complete Equipment for Cotton Mills.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.

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once made a remark
to the following effect:—

"THERE IS
nothing so bad but that
some fool will praise it, and
nothing so good but that
some fool will condemn it."

The Northrop Loom

Has now reached a stage where condemnation brings the latter end of our quotation to mind. : : : :

We have no fault to find on the whole, but we know of many instances where mills who cannot help but realize the advantages of our loom, still pursue the fatal policy of delay.

Hesitation in the face of facts is not only unwise but in the present case expensive. A mill buying these looms when we were first ready to take orders would have the extra cost well near annihilated by this time.

The following list shows a few of those who were prompt to decide:

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Pacific	Lockhart	Tremont & Suffolk
Merrimack	Gaffney	Amoskeag
Tucapau	Wilmington	Henrietta
Lawrence	Mass. Cotton	Spartan
Grosvenor Dale	Lancaster	Whitney
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Revolving Flat Carding Engines,
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Wet and Dry Twisters,
Looms,

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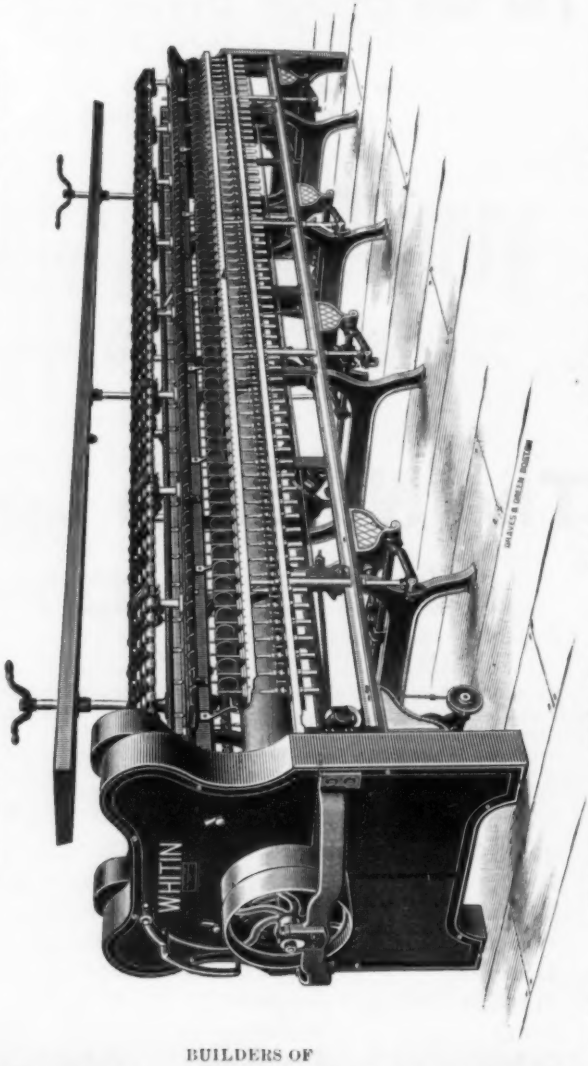

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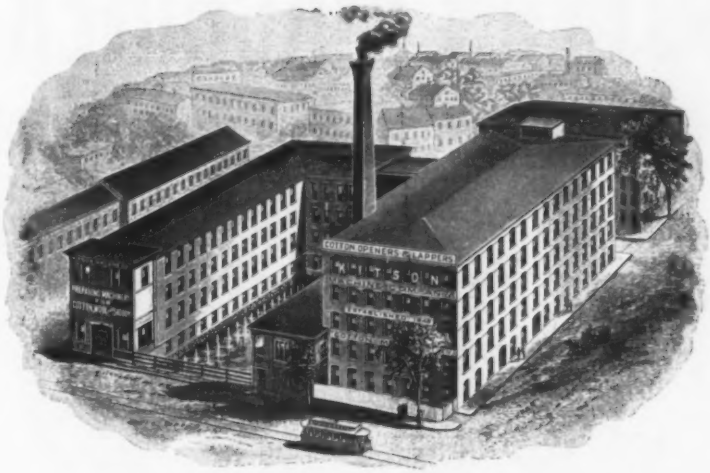
"Just as Good,"

Won't Do!



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are always the

STANDARD FOR COMPARISON.

New Catalogue for 1897 to be had on application to

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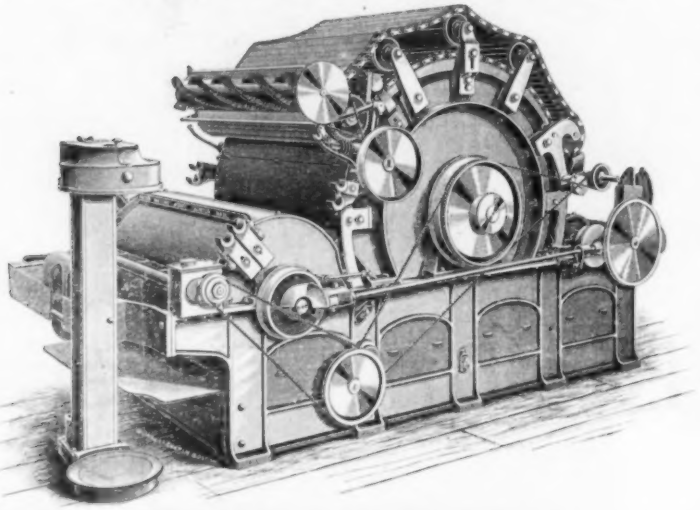
MASON MACHINE WORKS,

TAUNTON, MASS.

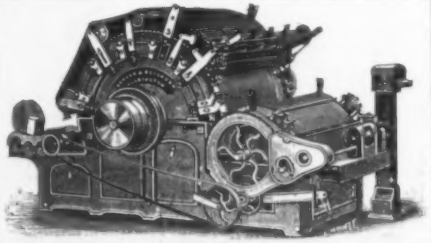
COTTON MACHINERY

NEW REVOLVING FLAT CARD.



Cards, Railway Heads,
Drawing Frames,
Spinning Frames,
Mules and Looms.

The Celebrated FALL RIVER IRON WORKS CO., one of the largest cotton mill plants in the world, is entirely equipped with our spinning and weaving. It has 262,410 SPINDLES of our PATENT SPINNING FRAMES and 7,469 of our LOOMS.



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(LIMITED),

PAWTUCKET, - R. I.

Revolving Flat Cards.

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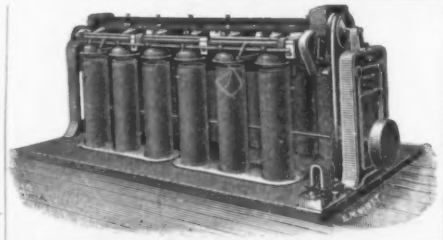
The quality of the sliver produced cannot be surpassed. Waste, "single" and roller laps are prevented, production increased, and great saving effected.



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All made from entirely new patterns and containing many valuable patented improvements.

Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

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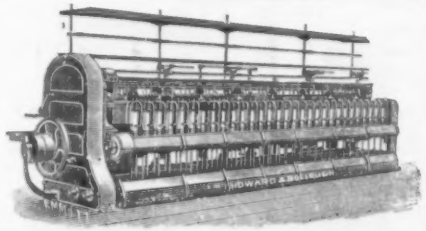

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for WOOL, SHODDY, and COTTON, is

Second to None

on the market. It holds more stock, requires less space, and needs no "attachments."

WOONSOCKET, WORSTED MILLS,
Spinners of Worsted Yarns. Mixes and Fast Colors Specialties.
Boston Office, 570 Atlantic Avenue.

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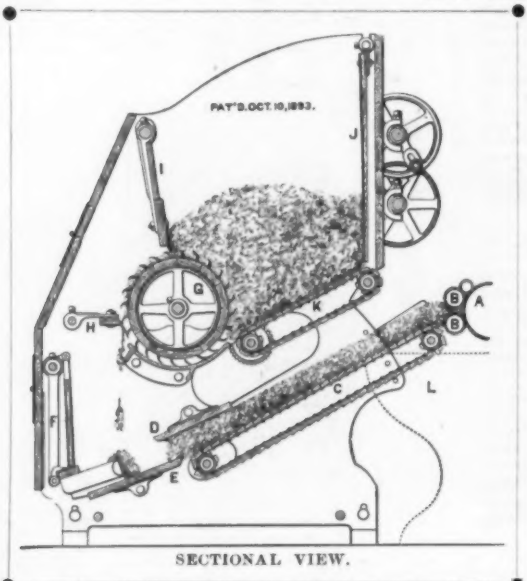
WOONSOCKET WORSTED MILLS,
EDWIN FARNELL, Agent.



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THE FISHER CARD FEED is simple in construction, is strongly built, turns out even work, requires little changing, and feeds the same whether full or nearly empty.

It is built in all sizes and guaranteed as represented.

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Worsted Yarns.

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A. GARTH, Supt.

(Second order.)

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CROMPTON LOOM WORKS,

Builders of every variety of

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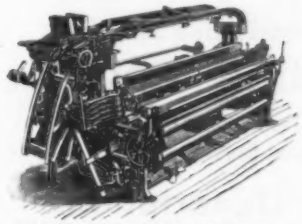
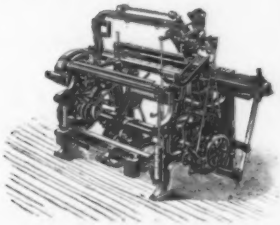
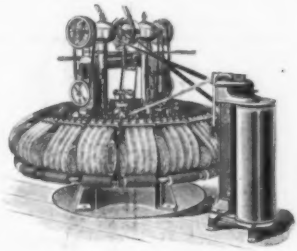


1896 Woolen and Worsted Loom.



Standard Gingham Loom.

Wool



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Wool Comb.

For Combing

COARSE
MEDIUM
FINE } **WOOLS.**

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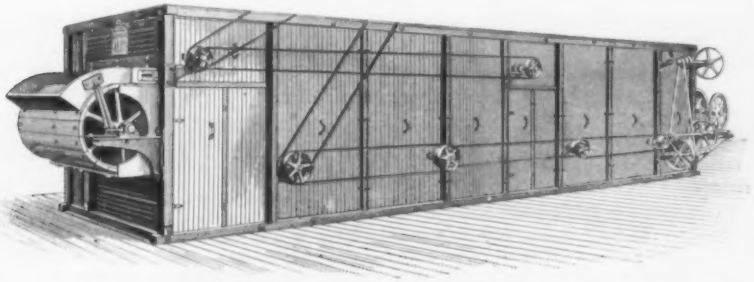

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Underwear Dryers. Stocking Dryers. Yarn Scourers.

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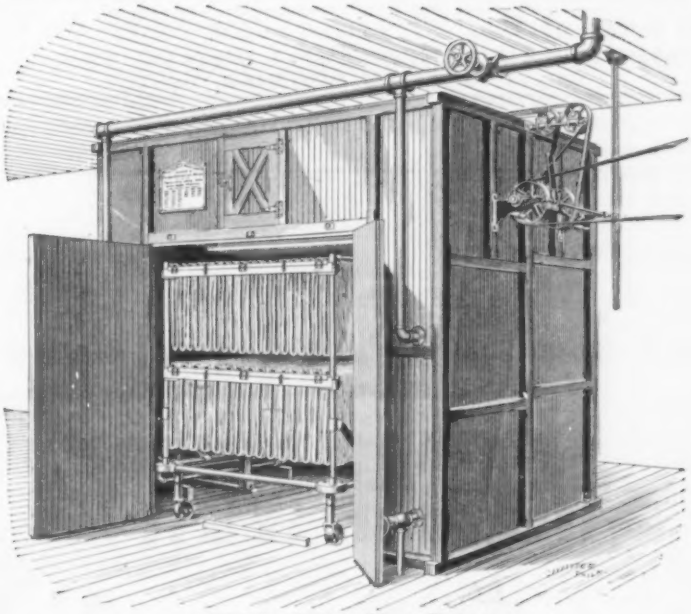

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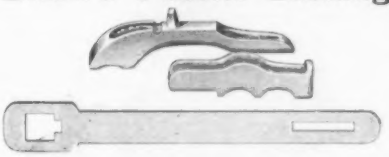

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

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No bent stirrup resting on rolls.

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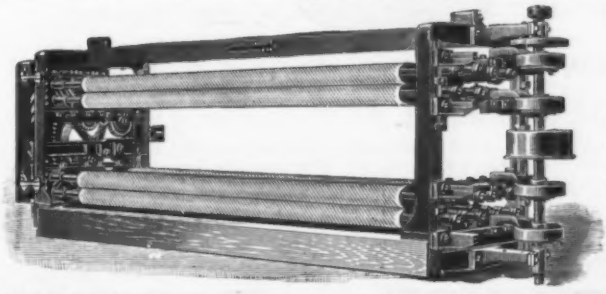

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4th.—Being Rounder, Closer and Sounder, it spins better.

No ends to run up on the mule. Less waste made. The spools hold more stock. Less Creeling to be done.

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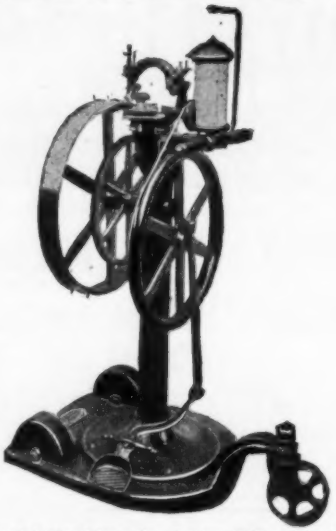

Special Machines for Cotton Mills, Woolen Mills, Print Works, Bleacheries, etc.

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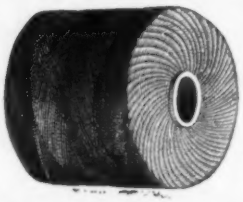

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PROVIDENCE, R. I.

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OF EVERY DESCRIPTION.
Our New Works and Office - - -
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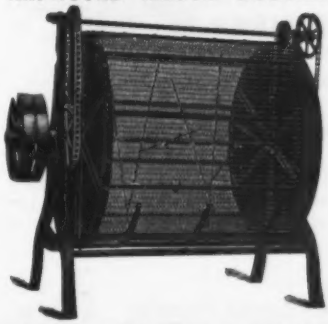

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Advantages Gained by Using Above:
Cleaner stock, stronger yarn, more yarn, and less card waste

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Offer the best quality medium sizes, most evenly assorted, at the lowest prices in the market. Satisfaction guaranteed. Business established in 1832.

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Sample Orders Solicited.

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Keeps new sketches and designs always on hand.

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Machines for Covering Electric Wires and Cables, Packing Braiders, Gimp Machines, Spooling and Doubling Machines, Special Machinery.

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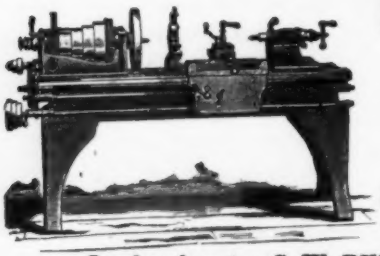

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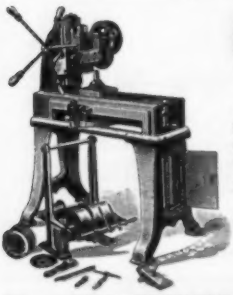

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Carding Engine Feeder. 577,247. J. F. Geb, Franklin, Mass.

Circular Knitting Machine Stop Motion. 576,987. D. F. Sullivan, and A. White, Lowell, Mass.

Cloth Measuring Machine. 577,161. A. Edwards and J. C. Garten, Willow Springs, Mo.

Cloth Pressing Machine. 576,666. D. Gessner, Worcester, Mass.

Drawing Frame. 576,736. W. V. Threlfall and C. Mills, Newton, Mass.

Device for Feeding Fibre to Fibre treating machine. 576,298. J. M. Blaisdell, Winthrop, Mass.

Electrical Warp Stop Motion for loom. 577,077. A. C. Shuttleworth, Philadelphia, Pa.

False Reed for Loom. 577,125. T. Albinson, Paterson, N. J.

Knitting Machine Needle. 576,172. E. H. Sturtevant, Franklin, N. H.

Knitting Machine Presser Stand. 577,820. D. Hurley, Bennington, Vt.

Knitting Machine Stitch Former. 577,610. W. T. Barrett, Bennington, Vt.

Knitting Machine Stop Motion. 576,544. W W. Brunson, Chicago, Ill.

Loom. {576,174. 576,175. W. Weaver, Norwalk, Ct.

Loom. 576,508. J. H. Northrop, Hopedale, Mass.

Loom. 577,629 A. K. Pratt, Northbridge, Mass.

Loom Jacquard Mechanism. 577,741. T. Halton, Philadelphia, Pa.

Loom for Cross Weaving. 576,300. J. Buckler, Philadelphia, Pa.

Loom Loose Reed Motion. 576,366. G. F. Hutchins, Worcester, Mass., and J. Nightingale, Summit, N. J.

Loom Shedding Mechanism. 576,506. G. O. Draper and J. H. Northrop.

Loom Shuttle. 576,921. O. B. Truesdell, Sturbridge, Mass.

Loom Shuttle Threader. 576,348. J. E. Dolber, Manchester, N. H.

Loom Warp Stop Motion. {576,504. 576,505. G. O. Draper, Hopedale, Mass.

Loom Warp Stop Motion. 576,509. C. F. Roper, Hopedale, Mass.

Loom Warp Stop Motion. 576,882. J. H. Northrop, Hopedale, Mass.

Loom Weft Controlling Mechanism. 577,441. J. E. Martin, Worcester, Mass.

Machine for Brushing and Rolling fabrics. 577,478. F. A. H. Dewald and E. Crispell, Catskill, N. Y.

Manufacturing Articles from Fibrous materials. 577,135. P. H. Holmes, Gardiner, Maine.

Marking Tag for Rolled Goods. 576,234. W. D. Smith, Prophetstown, Ill.

Means for Napping Fabrics. 577,602. M. H. Grosselin, Sedan, France.

Mechanism for Vibrating Doffer rolls. 576,262. J. Fennessey and J. M. Pilling, Cohoes, New York.

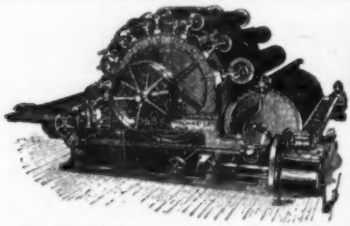
Piano Machine for Punching Jacquard cards. 577,585. V. Royle, Paterson, New Jersey.

Quarter Saving Mechanism for Knitting machines 577,276. J. L. Wentworth and J. Dempster, Little Falls, N. Y.

Retting or Steeping Flax or Hemp. 576,867. G. Loppens and H. Deswarte, Nieuwpoort, Belgium.

Rib Knitting Machine. {577,788. 577,789. R. W. Scott, Philadelphia, Pa.

Silk Spinning and Twisting Machine. 577,195. H W Morgan, Carbondale, Pa.



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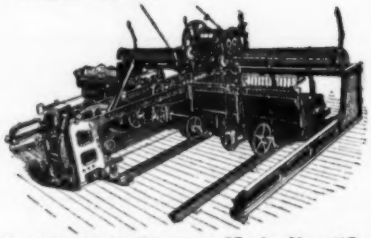

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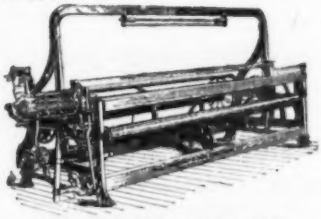

Blanket Loom No. 128.

Spinning Mule. 576,730. S. Jackson, Pawtucket, R. I.

Spinning Spindle. 577,056. W. G. Morrison, Willimantic, Conn.

Stop Motion and Alarm for Wool finisher cards. 576,749. P. H. Walsh, Saugus, Mass.

Straight Knitting Machine. 576,376. F. Raven, Philadelphia, Pa.

Straight Knitting Machine. J. Nelson, Rockford, Ill.

—The story of the Saltaire Mills, Eng., is one of the romances of the textile industries. Suffice it to say, comments our English exchanges, that the advent of high protection in the United States has as a result—or at least much to do with—the commercial destruction of one of the finest industrial enterprises ever founded by the genius and ability of one man. After the death of the founder adverse times came upon it, and led to difficulties which finally ended in its acquisition by a syndicate of local capitalists, who, it is now rumored, will shortly turn it into a public company and place the shares on the market. The syndicate have worked the mills since 1693, when they acquired possession from the members of the Salt family. Since then there have been great improvements in machinery and it is understood that the affairs of the undertaking have shown a wonderful revival.

—The Japan Gazette reports that, according to the returns prepared by the Cotton Spinners' Union, the net profit of fifty-three spinning companies in the country during the first six months of last year amounted to 2,043,233 yen, of which 639,776 yen were set aside as reserve funds, and 1,124,062 yen were distributed in dividends. The average for each mill was net profit 38,552 yen, reserve 12,071 yen, and dividend 21,209 yen. Compared with the preceding six months the total profit shows a decrease of 107,386 yen, and of 2.2 per cent. in dividends. This comparatively unfavorable state of the industry is attributed to the general rise in wages of the factory hands. [The value of a yen is about $1.00 in gold.]

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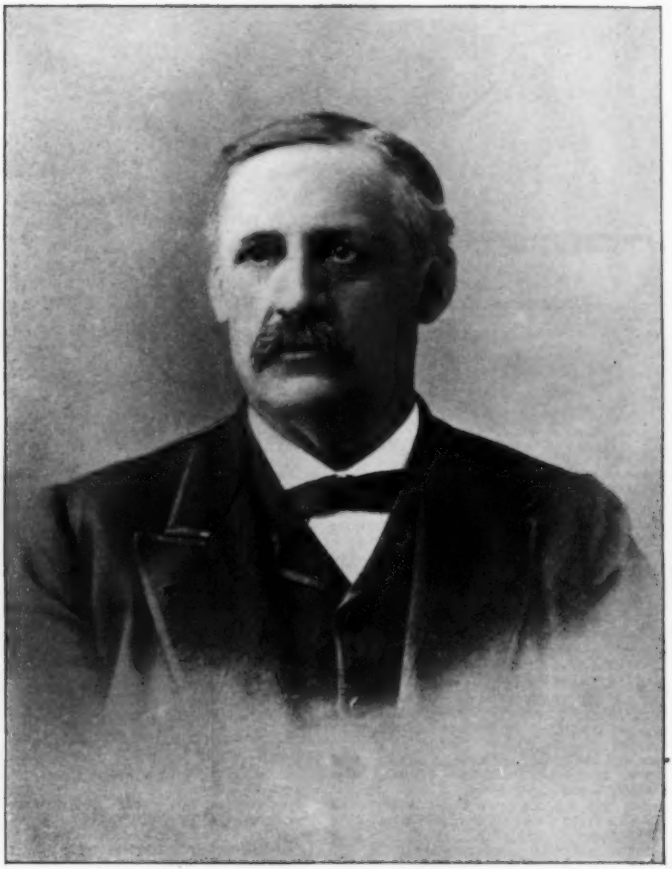

HON. WILLIAM H. HAILE,

PRESIDENT NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.

TEXTILE WORLD.

Vol. XII. MARCH, 1897. No. 3.

HON. WILLIAM H. HAILE.

Massachusetts is a commonwealth of distinguished men engaged in manufacturing, commercial and mercantile pursuits. The whole community feels their impress, in its beneficence upon everything pertaining to the progress and welfare of industrial life. Not only do the character and spirit of such men permeate all the avenues of trade and traffic in this State, but those of all other New England States, and elsewhere, in which they may have business interests, near or remote. Massachusetts has many men in whom she is justly proud for their enterprise, public spirit and broad ideas of business requirements, and for their uprightness. One of the foremost among these is the subject of this sketch, whose name is familiar and respected in every city and hamlet of the State, who is looked upon as a true representative of what is pure in politics and in business affairs, and whom the people delight to honor.

Governor Haile is a familiar figure in Massachusetts affairs, and widely known also beyond the borders of his adopted State. He was born at Chesterfield, N. H., Sept. 28, 1833, and his father, William Haile, was the first Republican governor of the Granite State. While he was yet very young his father moved to Hinsdale, N. H., and in that town his boyhood days were passed and his earlier education obtained. After graduating from the Hinsdale public schools he prepared for college at Kimball Union Academy, Meriden, N. H., passed a year and a half at Amherst, and then entered Dartmouth College, from which he was graduated with high honor in 1856. Then he went to Springfield, where he studied law and was admitted to the bar. For a short time he practiced law in Boston, after which he returned to Hinsdale to engage in the manufacture of woolen goods. He became a partner of his father and Mr. Frost, under the firm name of Haile, Frost & Co. The business was afterward transferred to a corporation called the Haile & Frost Manufacturing Company, of which Mr. Haile is now the president. The Hinsdale establishment is nearly as old as the century. Two previous mills on the same site have been burned. In 1849 William Haile took up the business in company with Daniel H. Ripley, who subsequently sold his interest to John D. Todd. Mr. Todd sold out in time to Mr. Frost, whose firm had been the selling agents of the mill for some years, and a little later W. H. Haile was taken into the firm. Although Governor Haile died in 1876, the firm name has never been changed. During all his years of active life as a manufacturer, the elder Haile lived in the plain two-story house directly opposite the mill office, often going away to a seat in the legislature, then to attend the constitutional convention and preside over the Senate, and finally, in 1857 and '58, to serve as chief magistrate of the State.

Mr. Haile was married to Amelia L.,

daughter of Ethan S. and Louisa (Burns) Chapin, of Springfield, in January, 1861. Mr. Haile resided in New Hampshire, until 1872, when he removed to Springfield. During his residence in Hinsdale he was a member of the New Hampshire legislature three terms, in 1865, 1866 and 1871. Nine years after his return to Massachusetts, in 1881, he was elected mayor of Springfield. In 1882 and 1883, Mr. Haile represented the first Hampden senatorial district in the legislature, serving as chairman of the Committee on Military Affairs and Committee of the Mercantile Affairs, and also a member of the Committee on Banks and Banking, and on Manufactures. Mr. Haile was first nominated for Lieutenant Governor in the autumn of 1889, on the ticket headed by J. Q. A. Bracket, for the term of 1890. The ticket was elected, but Mr. Bracket was defeated by William E. Russell. In 1890, Mr. Haile was re-elected and was again nominated in 1891, on the ticket with Charles H. Allen of Lowell, Mr. Allen being defeated and Mr. Haile again re-elected. In each of the three years that Mr. Haile was elected Lieutenant Governor, his vote was larger than that of the Republican candidates for governor. In 1892, Mr. Haile was placed at the head of the Republican ticket, with Roger Wolcott for Lieutenant Governor, and in this contest was defeated, Mr. Wolcott being elected with the Democratic governor, William E. Russell. It will be remembered, however, that in this election a confusion arose in the marking of the ballots, because of the presence of the name of Wolcott Hamlin on the tickets. In this way very many votes intended for Mr. Haile were negatived by wrong marking, and the number of such is believed by many of Mr. Haile's supporters to have been sufficient to lose him the election.

Mr. Haile is, at the present time, president of the Haile & Frost Manufacturing Company, the Hampden Loan and Trust Company, the Springfield Gas Light Company, National Association of Wool Manufacturers, also director in the Springfield Fire & Marine Insurance Company, Massasoit Paper Company, Chester Paper Company, Berkshire Cotton Manufacturing Company, Springfield Library Association, and one of the trustees of the Springfield Institute for Savings. The choice of Mr. Haile for the presidency of the National Association of Wool Manufacturers in 1895 was due, in a great measure, to the favorable impression made by his eloquent speech at the great mass meeting of wool manufacturers in New York City, January, 1894, to protest against the woolen schedule of the Wilson Tariff Bill, which had then passed the House of Representatives in a form which threatened the xtinction of the woolen industry.

Mr. Haile is the sixth president of the National Association of Wool Manufacturers, his immediate predecessor being the Hon. Rufus S. Frost, who succeeded William Whitman, the treasurer of the Arlington Mills, in 1893. The wool association has been remarkably fortunate in the character of its presidents, all of whom have occupied prominent positions in public and social life.

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BRANCH OFFICES:

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This Directory is published in the spring in one volume separate from the TEXTILE WORLD. See page 199.

Special quarterly issues are published in January, April, July and October; one (January) being a statistical issue, and the others devoted especially to the cotton, woolen and knitting branches, respectively.

Correction.

In the February issue of the TEXTILE WORLD there appeared an item under the head of West Chester, Pa., to the effect that the Brandywine Knitting Mill had been sold under foreclosure of mortgage. This statement was a most unfortunate error, so far as the location of the mill was concerned, and we deeply regret its publication. The mill property referred to, which was sold under foreclosure of mortgage, was the mill at Schenectady, N. Y., formerly operated by the Empire Knitting Co., which was also known as the Brandywine Knitting mill. The West Chester Brandywine Knitting Co., never has had any mortgage on its property, and has not been sold or offered for sale, nor been in the hands of a receiver.

A Tariff Commission.

We publish elsewhere in this issue a letter from S. B. Archer, who has made himself quite well known in certain sections of this country as a persistent advocate for a permanent tariff commission, to be appointed by the president of the United States. Mr. Archer has recently been in the vicinity of Boston, with the object of getting prominent business men and organizations interested in his scheme, although it is one in which he cannot, and as we presume does not, claim to be the originator. He is simply an active worker towards a plausible object. The question of a tariff commission that is free from any political bias is, in the abstract, an excellent one, but whether it is practicable is another thing, as there are more than two sides to it concerning its advisability. A large majority of the business men of this country would be glad to see all questions affecting business taken out of party politics; but, while this sounds well, one has to bear in mind that all of the great issues in politics are based upon those that have a direct bearing upon our industries.

Such has been the attitude of politics since the beginning of the government, and it would be a very difficult, if not an impossible, thing, to entirely divest it of all connection with existing industrial conditions.

We have made some little effort to obtain the views of prominent men in Congress concerning the establishment of a tariff commission, and the majority of those who have favored us with their opinions seem to befriend the idea.

The opinion is entertained by quite a number of people that a tariff commission could be formed so as to possess judicial and legislative functions, apparently forgetting that the Constitution specifically provides that all revenue measures, such as the tariff must be, must originate in the House of Representatives; and of the further fact that Congress cannot delegate any of its constitutional duties. The only thing that the commission could do, and in this would consist its greatest importance, would be to make recommendations that would have sufficient moral force to impress themselves upon the judgment of the members of Congress.

Congressman J. H. Walker is opposed to all commissions of every name and nature, as such are usually understood, but he is "in favor of a tariff board of experts under a carefully drawn law, whose decision shall be in harmony with any existing tariff so as to carry out the evident purpose of that tariff, whatever the law may be, and whose decision shall be binding for thirty days from the time it is made, or until annulled by Congress." This is consistent with Mr. Archer's views and those that he has been in consultation with in this neighborhood. Senator S. N. Cullom is in favor of the establishment of such a commission and has been so for some years. He made a speech in support of it in the Senate a few years ago when the tariff question was under consideration. He says, that "by the establishment of a wise commission of perhaps five men, who should be experts, familiar with all portions of the tariff laws, and as far as practicable, familiar with business affairs, much delay could be avoided and advantage gained, as well, in securing proper legislation on that subject." His view is also that "such a commission should be permanent and should be continually at work investigating the subject, and be required to make such recommendations or changes in the law from year to year, as in their judgment ought to be made, looking to the questions of revenue and protection of American industries and American labor. The establishment of such a commission would finally, in a large degree, at least, work the question out of partisan politics, so that such violent changes in the tariff laws might not be made at intervals when a change in administration from one party to another should occur." Senator J. R. Hawley is not in favor of a tariff commission. Assistant Secretary of the Treasury, Charles S. Hamlin, thoroughly approves of the establishment of a tariff commission "either as an independent body or in connection with a new department of commerce and manufacture. The power of such a Board, however, should be merely advisory; but, if constituted of experts of national reputation, any suggestions made by them in the form of a report, would certainly have great weight with Congress." Judge H. M. Somerville, of the Board of United States General Appraisers, also favors the establishment by Congress of a tariff commission, "formed on a non-partisan, as distinguished from a bi-partisan basis." He believes, however, "that the personnel of such a tribunal, properly constituted, is of the greatest importance. It should be composed of men of education and public distinction, fair and conservative in their views, and some of them, at least, learned in the law. No man should be eligible to appointment who entertains a fixed bias for the so-called 'American system' of high protective duties, on the one hand,

or who, on the other, too fervently believes that protection, whether purposely designed or incidental, is 'robbery.' Mere politicians, with strong partisan prejudices, should have no place on such a commission. It should be permanent, not temporary in its legal constitution."

As we have already said, there are two sides to any question, and this is not an exception. The wisdom of taking the tariff issue out of so-called party politics may be doubted, because of the danger that would arise of the people losing an active interest in measures of this kind. The same excuse for establishing a tariff commission could be used for establishing a commission to regulate the finances of the country; and, in fact, every issue that has entered into party politics. As it is now, people think and vote, and send representatives to Congress for the purpose of carrying out their views concerning what should be done in regard to matters of this kind. It is well to bear this in mind and not remove issues of this kind wholly from the immediate touch of the people, or take from them an active participation in the discussion and framing of laws affecting their commercial and industrial interests.

A Ramie Bubble.

One of the most audacious impositions that we know of for the promotion of a private enterprise, through the printing office of the United States government, at public expense, under the sanction of the United States Senate, is the publication of two documents relating to the promotion of the ramie industry in this country. Permission for this publication was obtained through the instrumentality of certain members of the senate, introducing in that body a lot of business circulars and statements of the president and manager of a ramie fibre manufacturing company professing to have places of business at San Francisco and Washington. The publication of these documents at public expense is an outrage upon the people of the United States. The senators who advised or lent themselves to such a thing are open to quite as much censure as the party in whose interest the documents were issued. By the use of the franking privilege these are to be distributed, free, through the post-office to advertise a private enterprise as a fit subject to foster on the national treasury. But more astounding than all this, is the proposition of the instigator, who has petitioned congress for an appropriation of $300,000 outright, and $15,000 annually for five years, for the establishment of three ramie experimental and mannfacturing stations in different parts of the country, to be supported from these appropriations to be expended under the supervision of the Secretary of Agriculture through a special agent to be appointed at a salary to be fixed by him. Of course, this petitioner expects the appointment of special agent.

This scheme is pushed by the promotor of several bottomless ramie companies; by one who has been working his impracticable schemes first in New Orleans, then in San Francisco, and now in Washington. His object is to float the companies in which he is interested by means of these appropriations; and, if appearances mean anything, it is about as black a job as ever was sprung on congress. The present attempt is the third one, and another one will be made at the next session of congress, probably. The statements of this promotor of a private enterprise at public expense, are too preposterous in many instances to warrant their serious consideration. He has placed the cultivation and manufacture of ramie in a most rediculous position, making assertions that cannot be borne out by any facts or experience. For instance, he claims that the plant can be grown in the United States from Florida to New Jersey, and even as far north as the State of Washington, which is absurd

on the very face of it. The plant cannot be raised on any commercial basis as far north as either of the latter named States.

As a matter of fact, there is no need for any appropriation of a single cent of government funds to promote the manufacture of ramie in this country. There are already ramie spinning factories in Europe; and textile spinners with long experience, not only in Europe, but in this country, are quietly working to perfect the process and cheapen the cost of its production. They are working in a legitimate way and do not ask for unheard of appropriations from the government to carry out the work. In fact a few thousand dollars in the hands of practical men will go farther than half a million dollars to be spent by men, who, in all the years they have been before the public begging money for their schemes, have shown no tangible results, nor even attempted serious work in developing a possible industry. Thousands upon thousands of dollars have been wasted upon ramie, and a large part of the loss is due to mismanagement and ignorance, and the sufferers have been the capitalists who have been roped into the schemes by the promotors showing them only the pretty side of the picture and suppressing the truth regarding the obstacles. Congress cannot afford to put itself on record by backing such enterprises or promoting obscure experimental companies.

Now, what does this schemer before congress want? According to his statement, he requires $223,000 from the government to defray the cost of demonstration the first year of a full product of ramie to be taken from 200 acres, which he says can produce 400,000 pounds of fibre ready for manufacture. No one familiar with the cultivation of this fibre would believe any such statement as this or think it possible that this amount of money should be required for such a purpose. His schemes have been repudiated by the Department of Agriculture, more than once. Bear in mind that one of the objects of this man is to establish a degumming factory, and he makes the statement that the trouble in the preparation of ramie is not in the process of decortication. Anyone who has given the least thought to the subject and looked into the cultivation of the plant, knows better than this. In several places in this pamphlet that is published with the people's money, he says $3,000 will pay for the decorticating machine for 200 acres. Now, as a matter of fact, there is no machine that has proved itself to be economically successful, and there are any number of degumming processes more or less valuable, some of which have been in use for years in Europe, where ramie fabrics are manufactured. How little truth there is in the man's assertions, will be seen in his statement that 18,000 to 20,000 pounds of fibre per acre are possible from soil where two or more cuttings are made. Now, as a matter of experience in different countries where careful experiments have been conducted it has been shown that with good culture, twenty tons of green stalks, including leaves, may be produced from two cuttings annually. Careful French experiments have shown that a ton of the green crop will produce 45 to 50 pounds of dry fibre, or 1000 pounds, not 20,000 pounds, per acre, in warm climates.

We do not wish to say a word against the ramie fibre itself. It is worthy of the greatest praise, as being the most valuable vegetable fibre, next to cotton, that has ever been placed before manufacturers. But whatever can be said of this fibre, there is no excuse for the United States government to furnish funds to float private schemes.

Duty on Cotton.

A convention of Sea Island cotton growers has been held at Valdosta, in the southern part of Georgia, and a

committee of eleven chosen, composed of gold Democrats, silver Democrats, Republicans and Populists, to draw up a petition to Congress for the imposition of a tariff duty of five cents a pound on Egyptian cotton imports. This committee has attended to its duties by addressing a letter to the chairman of the Committee on Ways and Means, Washington, claiming that if the burden of revenue raising is put upon Egyptian cotton, it will greatly stimulate a languishing industry, by making manufacturers use Sea Island cotton instend of the foreign product. The committee acknowledge that they are searching somewhat in the dark for reasons, in asking for any duty upon this cotton. Their case, however, is somewhat given away when they state that less than one-half of their product is taken by our own mills, the remainder seeking a market in foreign countries. This fact alone is enough to condemn the wisdom of their proposition of putting a duty upon Sea Island, or any other cotton grown in this country. Planters would not receive a fraction of a cent more for their cotton if the duty were raised to any amount that might be decided upon. So long as the commodity has to be exported, the foreign market will determine the price. The only way that a tariff on imports can advance the price upon any surplus domestic product, whether manufactured or in its natural state, is to establish conditions by which all exports of the latter can be prevented. A duty on wheat or grain would be clearly ridiculous, and the same holds good affecting cotton. If the Sea Island cotton growers would be benefitted by anything of this kind, it might have some weight, but they would not be. On the other hand, it would entail suffering on our manufacturers, who would be stopped in buying Egyptian cotton on account of its enhanced price, and be obliged to turn their attention to other cottons, resulting in sharp competition and over-production of one class of manufacture, instead of easing these conditions by a diversified product. In some instances it might oblige manufacturers, whose plants are fitted only for the spinning of long stapled cotton, to purchase the Sea Island variety, but the quantity thus secured would be too small to have any effect upon the price. Nearly all of our Southern exchanges, from Virginia to Texas, have more or less to say upon this subject, the majority of them favoring a tariff of this kind, notwithstanding they are opposed to the principles of protection in our laws.

The question is asked, why should not the growers of long stapled cotton be protected in view of the fact that they are suffering from competition with the Egyptians? to which is added that "there is involved no sacrifice of Democratic principle; it is a plain, every-day business proposition." If protection would cure the competition that is claimed to exist, the Southern grower is entitled to as much protection as the wool grower; but, as we have already stated, the competition is not in this country, but abroad, where prices are established. We are glad to note, however, that the suggestion is looked upon as a "plain, every-day business proposition." We should be very glad if this were carried out in everything affecting the tariff and its relations to the industries of this country, and have it totally divested of anything political. We hope to see our Southern exchanges carry it to other things besides cotton.

In order to meet the demand for Egyptian cotton, it is proposed to plant the seed in the South and take advantage of what it will produce, but it has been demonstrated more than once that however successful the raising of Egyptian cotton may be conducted in Egypt, it does not follow that it can be made equally successful in this country. It has been tried time and time again with certain deterioration the first and subsequent seasons. It would be an un-

satisfactory experiment, and better success, or equally as good, could be had with Sea Island seed away from the coasts of South Carolina, Georgia and Florida. So good an authority as Prof. W. C. Stubbs, director of the Louisiana Sugar Experimental Station, who is well known as a cotton planter of large, practical experience and ripe intelligence, says that from tests made under his observation, extending over several periods of time, Egyptian cotton cannot be successfully grown in this country. The most sensible way for the cotton planters in the South to follow, is to cultivate cotton from seed selected every year. This is the only proper course to pursue in any line of agriculture, as the way to keep the crop up to a standard and to prevent atavism, which will surely occur in any neglected crop. We know fully well how cotton planters have suffered for the last number of years, but it is a very serious question if they have not done quite as well as others engaged in agricultural pursuits.

Curtailing Cotton Acreage.

Conventions are being held in the Southern States, chiefly at Memphis and Augusta, for the purpose of creating a sentiment among cotton planters of the necessity of curtailing the production of cotton. These conventions have taken place quite frequently in past years, but we doubt if they have really amounted to anything in the way of inducing planters to lessen the acreage for planting cotton. The conventions, however, have done a great deal of good in bringing farmers, or their representatives, together to talk over the prospects affecting their vocation. They have been enabled in this way to exchange views to their mutual benefit, and, if nothing more can be said, they have been made to feel the necessity, and have carried out the idea of diversifying their crops, and becoming ess dependent upon others; and not only that, but they have pursued more economical systems of production in improved methods of fertilization, and in the use of economical machinery. As a topic for discussion at the convention to be held at Augusta, there will be considered the influence of dealing in future contracts at the cotton exchanges at New York, New Orleans and elsewhere, upon the price of cotton, as it affects the planter. We think that the planters, or those representing their interests, err greatly in their supposition that the so-called speculation at these exchanges, on the whole, militates against them. No doubt much of the speculation is to their injury and to all concerned in them, but more good than evil is derived from methods pursued at the exchanges, as it enables the planter to sell his crop at any time suiting his convenienee and pecuniary necessities. We are a little surprised that some of our Southern exchanges are unable to understand the relation of these exchanges to the movement of the cotton crop. They could not have existed these many years upon pure speculation without any legitimate or useful purpose.

—Although the jacquard is known and used in Japan, all the most complicated designs are woven in draw-boy looms; for the manufacturers believe that by the latter they obtain better results than by the former.

English Fabrics for America.

According to the January statement of the United States Consulate at Bradford, England, the value of declared exports from that district to the United States, amounted to $1,050,000, against $2,810,000 for the same month last year. This shows a large decrease in the exports to this country, in harmony with what has been going on for a number of months past. For the year ending September 30, 1896, the exports to the Uniied States from Bradford,

amounted to $17,587,239 against $24,706,809 for the previous year. The exports for 1894-95, were the largest on record for the same length of time, much of it occurring soon after the passage of the 1894 tariff act. The exports for the year ending September 30, 1895, were more than twice as heavy as any preceding year under the tariff act of 1890. The chief exports from that market were stuff goods and worsted coatings.

Machinery and Dividends.

It is noted in the returns made from the Fall River corporations that the mills that passed their quarter's dividends were mostly those whose plants were not equipped with as modern machinery as those that declared dividends. This is something worthy of note, and shows the great importance of mills keeping themselves supplied with modern devices. Machinery is given no opportunity now days to wear out; it is simply superseded by new improvements for increased production, or the saving of manual labor. This obliges the mill to always charge, annually, a large percentage of its gross income to the depreciation account, which enters largely into the cost of maintaining the equipment of the mill, and is also a matter of vital importance in estimating the cost of production; for though the improvements lessen the cost, still there is this item of expense made necessary because of competition, for if one mill has an improvement, another mill must follow suit or be left behind.

Weavers and Spinners.

There is some little disagreement between the spinners of worsted yarns and manufacturers who do not spin it but purchase it for weaving only, in regard to the proper customs tariff that should be placed upon this commodity. There is a feeling on the part of those that weave it only, that the yarn spinners are receiving under the present tariff a larger proportion of protection than they are entitled to or that justly belongs to them. Weavers manifest a willingness to agree to what the spinners demand, provided they can have an increase upon a more equitable basis, as they view it, in the duty upon the woven fabric. We are somewhat inclined to think, ourselves, that the spinner is sufficiently protected, with a 40 per cent. duty, the same as it stands now, so long as the weaver has but 50 per cent. duty on his finished product; still, we cannot understand how the weaver is to be much benefited by any decrease in the present tariff on yarns, unless he desires to make some of his purchases abroad. The weaver's idea, apparently, is to reduce the duty on yarn, so that the domestic spinner will feel the foreign competition, and be forced to sell his product at a more reasonable price. We believe, however, that these differences can be adjusted, notwithstanding that they appear somewhat hot at this time. One thing is very certain, that spinners and weavers cannot prudently act seperately in urging their wants upon congress. If they divide their forces, they will show ill-advised judgment, and will greatly impair the strength of their respective cases. There is only one policy to pursue, and that is of presenting their cases as one before the Committee on Ways and Means, and that through their recognized association.

We do not wish to criticise any of the motions that have been made by weavers or spinners, showing antagonism, more than we seriously advise them not to get too far apart, so that they cannot act in unison. We have talked with several of them, and they all recognize the importance of union of action; still, we notice that they are inclined to take up their cases separately in approaching members of congress. We speak ex cathedra, to a large extent, when we say that the weavers are very much disturbed about differential

duties between yarn and goods, claiming that 40 per cent. on yarns and 50 per cent. on goods are out of proportion to the manufacturing cost of the two branches of the industry. It is claimed that it costs twice as much to make a pound of yarn into goods as it does to make a pound of yarn from the wool. On this basis, it is thought the weaver should get two-thirds of whatever protection is given to goods, and the spinner one-third, instead of 40 per cent., which the spinner now gets, or over one-half the protection given to goods, as he figures it. An instance is given of thirteen ounce goods costing in England three shillings, or 75 cents per yard, upon which there is a duty of 50 per cent. or 37 1-2 cents per yard, of which the spinner gets 40 per cent. on the yarn in the goods, making 20 cents (40 per cent on 50 cent per pound, being the cost of 2-40 yarn), leaving to the weaver 17 1-2 cents for twice the manufacturing cost. The weavers, too, are pushing their claims (professing to have reliable information from a number of sources), that it costs in England 10 to 12 cents to make a pound of 2-40 yarn, while the schedule presented by Philadelphia and Eastern spinners calls for a duty of 24 cents per pound on this yarn, making a protective duty on the foreign manufacturing cost, of 200 per cent. We have not looked into the details of this case, but are assured by those who desire this amount of duty, that these figures cover more than simply the cost of labor and take in all collateral costs such as interest, tax, etc. In the matter of a compensating duty on yarn, it is asserted by a number of weavers that three times the duty on wool in the grease is sufficient for the spinner, and that 3 1-2 times, which they demand and have been getting, is too much, altogether. The weavers recommend on yarns a compensatory duty of three times the duty on a pound of wool in the grease, of the first class, and a protective duty of 30 per cent., which they say gives yarn a much greater proportion than what goods receive with four times the duty on a pound of wool and a protective duty of 50 per cent. We present this case of the weavers against the spinners, as the matter has been urged upon our attention. We do not at this moment, however, desire to offer any suggestions, more than what we have said above of the importance of the two interests harmonizing their differences before they go to congress to argue their claims.

The knitters, too, have entered their protests against prohibitive duties on wool thread waste, ring waste, slubbing waste, etc., believing that while the rates on wool in the grease should be eight cents per pound, that on thread waste should not be over nine or ten cents and other wastes not more than eleven to fifteen cents per pound. As will be remembered, the tariff of 1890 gave a protection of 30 per cent. on all wastes. Now, the knitters do not attempt to conceal their wants in this proposition, as they do not wish to be prohibited from obtaining this waste stock from abroad, which they claim is necessary in order to soften the harsh feeling of our domestic wools, so as to enable them to manufacture goods that they otherwise would not be able to do, thus throwing the trade that they should rightfully have, into the hands of foreigners. We think that the position of the knitters is a good one, and that they need all markets open to them in which to obtain their raw material, free from any imposition, but it should be clear to them that it is not the object of those who desire a duty on wool and wastes to make it possible for manufacturers to obtain their materials of this kind from abroad. We think knitters are very liberal in their views in showing a willingness to grant over eight cents per pound on wool. We think that knitters and wool growers, themselves, would be more benefited in the long run by limiting the duty on wool to six cents a pound.

Massachusetts Manufacturing Statistics.

The 1895 statistics of Massachusetts manufactures, issued by the Bureau of Statistics of Labor, did not make its appearance until quite recently. On account of the lateness of its appearance, much of the interest that manufacturers would naturally take in it is lost; still, it is not without certain retrospective value, as indicative of the status of manufacturing in this commonwealth for the years 1895 and 1894. The statistical returns in this report for these two years were made by 3,629 identical establishments, which represent a very large percentage of the manufacturing establishments in the State. In connection with this report, we have selected and tabulated certain statistics that are particularly applicable to the textile industries of the State. In order that certain features of the table may be better understood, we will give an illustrative example relating to the manufacture of cotton goods, as follows:

	Value of goods made . . .	$86,689,082
Less	" " stock used	44,575,179
	Industry product	$42,113,903
	Paid in wages $25,505,78	
Plus	profit and expense fund . . . 16,6 8,122	
		$42,113,903

With this explanation, the rest of the table can be comprehended by simply causal observation. In further explanation, we may state that the term "capital" does not mean merely cash capital or capital stock, but includes all forms of capital devoted to production. It is made up of the following items: Value of land, if owned; value of buildings and fixtures, if owned; value of machinery and motive power, if owned; value of implements and tools, (not including under machinery); value of patent rights, patterns, etc., if owned; value at cost of the material and articles to be used in the industry, including also goods in process of manufacture; nd the amount of cash on hand or in the bank. The aggregate amounts given as capital invested in the different industries, therefore, include all actual capital of all forms available or an process of production in the industries at the time of making the return. By reference to the tabulated statistics, it will be observed that in the cotton industry the amount of capital invested

INDUSTRIES.		Amount of Capital Invested.	Value of Goods Produced and Capital Invested.	Value of Stock Used.	Industry Product.	Total Amount Paid in Wages During the Year	Profit and Minor Expense Fund.	Percentage of Industry Product. Devoted to Profit, etc.	Percentage of Industry Product. Paid in Wages.	Average Yearly Earnings.	Average Number of Days in Operation.	Proportion of Business Done. Percentages.
Carpet,	1894	$7,268,879	$8,760,705	$3,621,574	$2,139,131	$1,326,356	$ 809,741	37.86	62.14	$355.06	259.15	61.55
"	1895	5,908,958	7,169,018	3,314,005	2,855,013	1,696,331	1,158,682	40.58	59.42	370.04	266.33	71.36
Cotton Goods,	1894	121,357,925	76,233,289	43,806,132	32,427,157	22,728,862	11,698,295	35.08	64.92	315.47	272.74	74.73
"	1895	115,226,307	86,689,082	44,575,179	42,113,903	25,505,781	16,608,122	39.44	60.56	336.75	296.93	81.35
Knit Goods,	1894	4,375,466	4,494,175	2,484,502	2,009,673	1,221,235	788,438	39.23	60.77	331.32	288.31	79.01
"	1895	4,421,717	6,286,122	3,334,138	2,951,984	1,793,284	1,158,700	39.25	60.75	333.32	288.00	80.49
Woolen Goods,	1894	92,435,934	71,219,705	38,396,351	32,823,354	19,427,137	13,396,217	40.82	59.18	339.85	295.19	86.84
"	1895	92,368,949	95,699,994	51,690,093	43,309,901	25,599,781	17,710,120	40.89	59.11	340.11	294.14	86.48
Worsted Goods,	1894	14,411,761	14,701,133	8,423,752	6,277,381	4,122,161	2,155,220	34.34	65.66	312.64	270.22	73.33
"	1895	14,957,015	18,726,448	11,845,886	6,880,562	4,722,005	2,158,557	31.37	68.63	336.96	308.34	88.69
All Industries,	1894	134,948,924	94,954,008	52,306,160	42,649,695	26,076,791	16,572,904	38.87	61.13	328.56	278.89	76.09
"	1895	121,905,980	131,745,264	72,102,994	56,225,149	32,595,170	23,629,979	42.03	57.97	421.30	288.19	80.85

was less in 1895 than in 1894, but that the amount of goods made was more in the former year than in the latter. The same conditions affected in the woolen and worsted manufacturing industries, except in the element of capital in-

vested. On the whole, 1895 was a better year than 1894, as shown in the average yearly earnings of employees and of the number of days in operation; also in the proportion of business done. In fact, the record as shown in the last item may be considered as fairly good. Cotton mills were operated to within 11.67 percent of their full capacity, and worsted mills within 11.43 percent of their full capacity. In both of these instances, the showing is decidely better than that represented in the percentage of business done for all of the industries. Taking this statistical showing concerning the Commonwealth of Massachusetts and comparing it with the general business throughout the country for the years 1894 and 1895, it will be seen that the status represented in these statistics conform very closely with the conditions of trade existing elsewhere. The year of 1895 was not one of normal business activity and prosperity, as is well known; still it was a better year than 1894, which was one of extraordinary and almost unexampled depression in trade and industry, due largely to the impediments in the way of sustaining business revival, caused by the state of the national financies and labor troubles in various sections. The depressed conditions of business existing in 1893 were still felt in 1895. There were certain favorable factors in the latter year, as the existence of excellent grain harvests promoting trade, though prices were low, and the increased earnings of railways. The most active months in the textile trade in 1895, were in August and November.

A Tariff Commission.

Editor Textile World:

In your editorial on "A Tariff Commission," I find two statements that require answering. In the first place you say that such a commission should be "non-partisan in its make-up," and by that I presume you mean that it should be composed of protectionists, tariff reformers and free traders. That these should investigate and make such recommendations to Congress as they could agree upon. But it can be very readily seen that such reports would be of no practical value for the very simple reason that each member having nothing but his own judgment to guide him, and having received his appointment because of his well known views on the tariff, he would judge the question from his own particular standpoint. But in order to come together each one would have to compromise his own judgment and the report he would sign would neither suit himself nor anyone else; and Congress knowing that fact would give very little weight to the recommendations of the commission.

A tariff commission to be of any value to the country, must, first of all, have fixed principles to guide it, not only in the making of its investigations, but, so that its reports shall be respected. The members of it should be sworn to carry out the spirit as well as the letter of the law, and should be men of such ability and standing that the people will have the same degree of confidence in their decisions that they have in the decisions of the United States Supreme Court.

Another point you make is: "The tariff is a revenue measure, and this must have its legislative origin in the House of Representatives." True, the Constitution does declare, "that all bills for the raising of revenue must originate in the House of Representatives," but that is all it does say about the question. But why it designates the "lower house" as their place of origin is a conundrum, still it is there and we must abide by it.

Now, what constitutes a revenue bill? Does the Constitution mean that in framing a bill for raising revenue the House of Representatives *must* go into ten thousand details (of which they know little or nothing and no time or inclination to learn), giving to one free trade and to another protection, or does it

mean that general laws shall be enacted for raising revenue and that all industries shall be treated equitably under that law?

It is one of the fundamental principles of our Government that every person shall have equal protection and equal justice under our laws; not one law for the rich and another for the poor. I believe it is the intent of our Constitution that all industries should be given equal justice under our revenue laws, not "protection" for sugar and "free trade" for salt. Let Congress pass a general law declaring that "the duty levied on all goods imported from any foreign country into the United States, that come into competition with similar goods manufactured or produced in the United Stated, shall be an amount fully equal to the difference in the cost of producing such goods in any foreign country, and the cost of producing them in the United States. That all goods not coming into competition with goods manufactured or produced in the United States, may be admitted free of duty unless a duty on such goods shall be deemed necessary for purposes of revenue or enforcing reciprocity treaties. Then have a commission appointed of the same dignity and standing as the United States Supreme Court, with life tenure of office, and clothe it with power to arrange schedules under the law. A commission appointed under such a law will take the question out of politics and yet be entirely within the spirit as well as the letter of the Constitution.

One objection that has been raised to this plan has been caused by the inability of the average citizen, to distinguish between judicial and legislative functions. Under the above laws the commission would have no legislative powers whatever. Its powers would be judicial entirely. Its whole power would be to hear the evidence, decide the facts and declare the result in the same manner as our courts of justice are doing every day. It would have no executive power, for after it had rendered a decision the treasury department would carry out the executive part, the same as they do under the present system.

The greatest advantage of such a system would be that the manufacturer or producer would know just what he was entitled to and would have rights that the commission would be bound to respect. Another objection that has been raised to this as well as all other plans for a permanent commission, is, that it would have no guarantee or permanency, for the reason that any law passed by one Congress could be repealed by the next. This is undoubtedly true, but if such a measure ever becomes a law, the present generation will not live long enough to see it repealed.

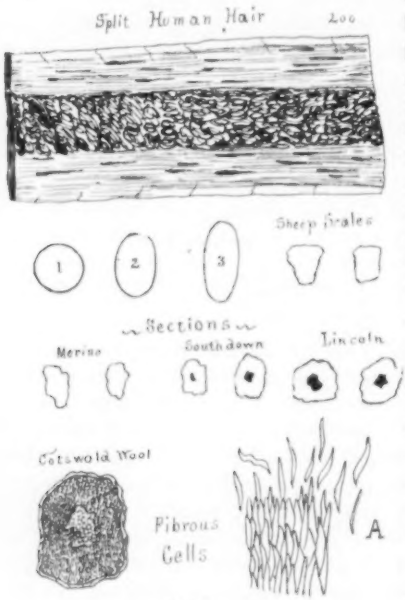
Newark, N. J. S. B. ARCHER.

Textile Fibres.

[Lecture of Henry G. Kittredge before the Lowell Textile School, Lowell, Mass., February 24, 1897.]

My subject is at the foundation of all woven structures, whether it applies to that which is mineral, animal or vegetable. The mineral, which may relate to iron, copper, gold, silver, asbestos, etc., I shall not touch upon, but confine myself to the animal and vegetable, and only to a limited extent to these. Within the brief time that I have at my disposal, it would be impossible to even allude to the vast array of textile fibres that belong to these two classes. I shall, therefore, be obliged to confine myself to but few of the textile fibres, and to only those in common use and familiar to our manufacturers. Textile, etymologically, applies to something that is woven or suitable for weaving, and naturally this embraces a long list of materials to which there are constant accessions, chiefly from the vegetable kingdom. Notwithstanding the existence of an immense amount of material out of which textiles can be made, those that are utilized for this purpose are comparatively few. Suit-

ableness and comparative cost of production and preparation determine the extent to which any fibre is used. Wool, cotton, flax, jute and hemp are the principal fibres employed in fabrication, the latter two for the coarser and cheaper grades of fabrics. Wool stands first in value and cotton in quantity in the consumptive demand for textile purposes. About 1,500,000,000 pounds of clean wool and 5,800,000,000 pounds of cotton are required to meet the annual wants of mankind to day;



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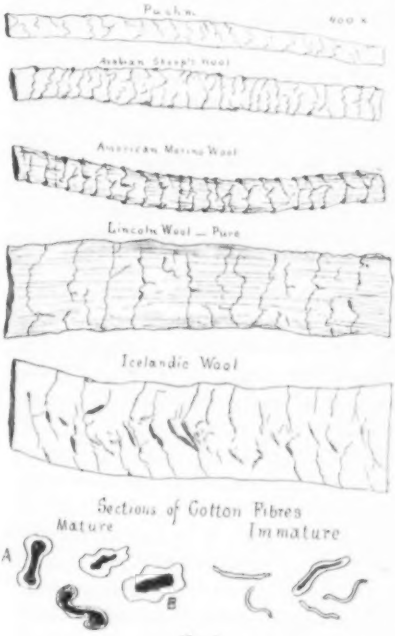
and in all the vicissitudes of their existence, from their first manipulation to the last, they preserve their physical characteristics. This can be said, almost without exception, of all the fibres enumerated. Mechanical destruction is almost an impossibility. Wool, from the time it leaves the animal's back that bears it to its condition as flocks; and cotton, from the time it is gathered to its condition as pulp, retain their distinguishing characteristics—they are not beyond recognition.

Animal and vegetable fibres are structurally and chemically different, and are in many respects antipodal, and agents that are destructive to one are oftentimes strengthening to the other. Their dissimilarity is of great importance and value in their ministration to the wants of mankind. Their treatment throughout all the processes of manufacture, into whatever form, is necessarily unlike in important particulars if not always in general principles. Wool, cotton, silk, flax and ramie possess individual characteristics that have to be taken cognizance of in whatever manipulation they are subjected to for the most perfect results. The mechanical appliances that are necessary to accomplish the best results are similar yet distinct and peculiar to each of these staples, strictly owing to the nature of their respective fibres. The study, then, of textile manufacturing begins with the single fibre of the material that enters into the construction of the fabric. The first principles of manufacturing, therefore, start at this point, and without a knowledge of their significance it is impossible to attain results of the highest excellence.

All fibres, animal and vegetable, are of cellular growth, except silk, which is a homogeneous filament; the ejected secretion of a species of caterpillar. The vegetable cell is comparatively simple, while the animal is more or less complex, but not, consequently, more difficult to understand, nor more intractable to the requirements of manufacture. On the whole, animal fibres are more easily handled and yielding to mechanical and chemical processes, than vegetable fibres. They are more subservient. This is owing almost entirely to the difference in cellular structure, giving to the animal fibre greater elasticity and tenacity, as well as greater susceptibility to the absorption and retention of coloring matter. The physical properties of fibres are of greater importance to textile manufacturers than the chemical properties; in fact, the latter enter but little, if at all, into his calculations. The revelation of the physical

properties is procured through the instrumentalities of the microscope and dynamometer, or, technically, the trichometer. The anatomy and fineness are obtained by the former, while the latter furnishes all the necessary data relating to tenacity and elasticity. Both of these instruments are, in themselves, simple in their construction, but valueless in the hands of the inexperi-

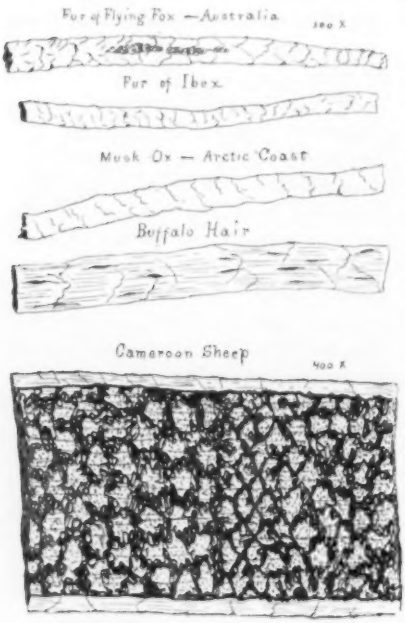


No. 2.

enced. Their workmanship should be of the best, in respect to what is required of them. A fibre of any kind placed under a microscope is an uninteresting subject, if not immersed or mounted, as technically called, in some medium whose refraction of light is of such a kind as to clearly define the physical characteristics of the fibre. For general purposes, pure glycerine or some mixture with this as the principal ingredient, I have found to be the best, though in some instances Canada balsam is the best where there is considerable opacity to be overcome. Nearly all of the microscopic illustrations that I shall employ this evening are those obtained of fibres immersed in glycerine or Farrant's medium; the latter being used when I desire to preserve my specimens permanently. Their images were reflected by the use of the camera lucida upon sheets of drawing paper, and their outlines and markings delineated with India ink, and afterwards photographed for the stereopticon. I preferred this to photograph in first place for reasons not necessary to explain at this time.

All animal fibres used in the textile arts are from the mammalia, wool being the principal one; but a clear definition of wool is an impossibility, the term being more or less conventional. Wool is no more than a variety of hair, and no animal that has one is wholly free from the likelihood of having the other. There are types, however, and the typical hair is that from the human head, and the typical wool is that from the merino sheep. These are to be seen on plates *1* and *2*. It will be observed that hair has three distinct parts in its structure—the central part or medulla, the pith, so to speak, the cortex or fibrous part, and the cuticle or scaly part. The highest type of Merino wool, on the other hand, has no medulla, but is rich in its cortical texture, while its scaly part is conspicuous, and constitutes one of its chief values as a textile fibre. The strength of the fibre is in its cortex, which is of a laminated, cellular formation, as seen on plate *1* at *A*. The cells are elongated and tapering, overlapping one another, an arrangement which gives strength and elasticity to the fibre—most valuable properties. On the same plate we have a transverse section of a Cotswold wool fibre, in which is to be seen the round medullary and the angular cortical cells, and the cuticle incasement. Cotswold wool is typical of all the English long stapled wools, as the Leicester, Lincoln, Oxford Down, etc. As will be observed, it approximates the cylindrical form, as will also be seen in the transverse sec-

tions of the Lincoln wool fibres. These transverse sectional forms of wool fibres have an important relation to their value in the textile arts. There are three general sectional forms of hair and wool (plate *1*): cylindrical (No. 1), oval (No. 2), and eccentrically elliptical (No. 3). These forms are represented in the hair of the American Indian, which is cylindrical and rigidly straight; the hair of the Caucasian race, which is oval and wavy; and the



No. 3.

hair of the negro, which is elliptical, nearly flat and curly. Among wools, these forms are represented respectively in the Lincoln, Southdown and Merino, as seen (plate *1*). These characteristics contribute largely in making the Merino the ideal felting and the Lincoln the ideal non-felting wool, with the Southdown as intermediary. In connection with this let me refer to plate 2, upon which is to be seen fibres of Merino, Lincoln and Icelandic sheeps' wool. I desire to call attention to the markings thereon showing the arrangement and relative conspicuousness of the epithelial scales. The scales on the Merino wool are distinctly seen; they stand away from the shaft of the fibre and are deeply denticulated. On the other hand the scales on the fibre of Lincoln wool are less prominent, and hug the shaft more closely, while the Icelandic wool fibre scales are still farther away from those of the Merino, with the imbrications less regular. These relative, serrated conditions of all animal hair and wool, in conjunction with their formation, either round, oval or elliptical, straight or curly, give to them their comparative felting properties. The effect of the shape of a fibre in any tendency to curliness may be better appreciated by taking a hair from the human head and flatten it by drawing it between the nails of the thumb and forefinger. Should this operation be repeated often enough, the hair would become quite flat and curly; and were its scales near together, uniformly laminated and deeply serrated, it would possess all the requisite properties for felting.

While this plate (*2*) is before us, I will direct attention to the wool fibre of the Arabian sheep. Its special interest at this time is in the supposition that it is the progenitor of the Merino. The fibre here pictured was taken from the side of an Asiatic fat-rumped sheep that was imported by the late George W. Bond, of Jamaica Plain, Mass. Mr. Bond was inclined to favor the theory that the best points of the Spanish Merino wool were obtained from this breed of sheep that was introduced into Spain many years ago. It will be noticed that the Arabian and Merino wool fibres are not dissimilar in fineness and in their markings. The Arabian sheep from which this fibre was taken, bore a fleece that was black on the neck and head, and white elsewhere, mostly hairy. The wool, or fine growth, was underneath the hair; and this would be the natural outcome of the fleece of the Merino sheep were it left to grow wild, that of becoming

hairy as it reverted to its original condition. This takes us to the reality that hair and wool are but modifications of the same thing, that they grow upon the same skin and issue from contiguous follicles. The hair of man is not unlike that of the sheep and the camel, and the same may almost be said of all mammals, from the highest to the lowest type. The most marked distinctions are to be found in the under growth, or in the fur or wool. The camel has underneath its hairy coat, a fur or wool, called pushm, of great softness, that possesses points of much value in the textile art. Under the microscope it is not distinguishable from wool, in fact it might be denominated wool. The fur of the flying fox of Australia and that of the ibex are wool in some of their markings (plate *3*). The undergrowth of the musk ox, whose habitat is along the Arctic coast, is genuine wool. The fine hair of the buffalo resembles wool. The term wool is instinctively associated with the sheep, notwithstanding the fact that there are other lanigerous animals. Besides this, all sheep do not bear wool; many bear nothing but hair. This is the case of all those that live in the equatorial regions. The Cameroon sheep is an instance, a fibre from which is to be seen on plate *3*, magnified 400 diameters. This fibre was taken, at my request, in 1888, from a handsome specimen of Cameroon sheep at the Berlin Zoological Garden. It will be seen that the fibre consists almost wholly of a medulla, and in consequence, it possesses comparatively little strength, and is of little value. To the tropical sheep, wool would be an incumbrance.

(To be continued.)

An Important Wool Case Settled.

The case of the Tradesman's National Bank of New York vs. Phillip Jagode & Company of Philadelphia, better known as the Warren wool case, has been settled, Thayer & Rugg, counsel for the defendants, receiving a check for $25,084.27 on the Tradesman's National Bank, which is a victory for the defendant, and which ends the matter, except the establishment of the ownership of four bales of wool, valued at $182, the suit to determine which is now pending in the case of Phillip Jagode vs. the Tradesman's National Bank, before the Philadelphia courts.

Phillip Jagode & Company, nearly a year ago, disposed of 200,000 pounds of wool to Sayles & Jenks, woolen manufaturers of Warren, the price being $25,000 and $26,000. Shortly before, the Philadelphia firm of Keene, Sutley & Co., importers of wool, from whom Jagode & Co. had purchased the goods, failed. Previously the Tradesman's National Bank had accepted warehouse receipts from the insolvent firm for various amounts of wool. The defendant in the suit just settled claimed that the bank induced Stayles & Jenks to buy the wool of Jagode & Co., that its ownership might be determined in another state than Pennsylvania. The wool was shipped to Warren, where it was replevined by the Tradesman's Bank. Jagode & Co., in turn, replevined it from the bank. The Boston and Albany Railroad next entered its hand, and announced its intention to convey the wool to New York, apparently crediting the bank's view of the case, whereup Thayer & Rugg instructed their deputy sheriff to organize a posse and, if necessary, resist by force any attempt to move the cars containing the wool, which was standing on a siding. An engine was backed up to move the cars, but the railroad officials concluded not to force the issue, and the cars remained where they were.

Then an agreement was made under which the wool was shipped to New York, and the final settlement resulted. The bank gave up its claim to 457 out of the 461 bales of wool, paid for the wool and 6 per cent. interest, and added $1000 for damages, a total of $25,-

084.27. The remaining four bales will go to the winner of the suit pending in Philadelphia.

Charles L. Gardner, the late ex-Gov. William E. Russell, Hopkins, Bacon & Smith and Franklin D. Peale of New York appeared for the plantiff; Thayer & Rugg for the defendants.

The Lowell Textile School.

Conclusion from February of S. N. D. North's address at the inaugural exercises of the Lowell Textile School, Lowell, Mass.

Employer and artizan have then a common, equal, mutual interest in technical education; this textile school is to be a common ground—a temple of peace, standing above and beyond the antagonisms and misunderstandings which so often disturb the relations of capital and labor; an instrumentality through which both may be brought in touch with the spirit of the age, the march of progress, to their mutual gain. I am wholly in accord with the popular impression that the American artizan, in average intelligence, in ingenuity, in physical energy, has not his match. But in the technical education which underlies all modern manufacturing, the artizan of every other considerable manufacturing nation is his superior. The best-educated man will beat the man with the best natural gifts, not always, but in the long run, nine times out of ten.

Machinery, considered apart from the human agency behind it, tends to reduce the whole world to a level plane. The spinning frame in India or China will accomplish just as much work, turn out as many pounds of yarn per day or week, as the same frame located in Lowell. What then differentiates the labor of Lowell from the labor of India and China? What shall save the one from the overwhelming competition of the other? Nothing can save it but the superior intelligence of the men who run the machines. That alone will not save it, unless it is an intelligence trained in the art and technique of manufacture. It is because they have found this out abroad that they have founded technical schools for the artizan. They are not one whit in advance of us there in the mechanism of manufacturing. They are one whole generation in advance of us in the training of their artizans.

Technical education has become imperative to counteract the tendencies of industrial forces. The effect of machine manufacture is to narrow the man down to the endless, automatic iteration of the single operation. Is this the destiny to which all our artizans are doomed as the result of modern inventions? If it were so, there would be reason to say that these inventions are a curse instead of a blessing. But it is not so. Cheap labor is only another term for ignorant labor. The good things of this world are not for the artizan content to know his one machine and leave it there; there is no promotion in this world for such men. There is no bar to the promotion of the man who determines for himself that he will know all there is to be known about the industry to which he devotes himself. The perfection of machinery, so far from limiting the opportunities to rise in life, has enormously increased them to every man who fits himself to take advantage of them. If the number who rise seems small, it is because the number fitted to rise is small.

Factory life, to the man who enters it as a treadmill, is a dreadful outlook. To the man who enters it competent to master it, it offers opportunities which were never more brilliant, and the doors are wide open. Labor, by and of itself, is a commodity, which men buy and sell as they do cotton and wool. Labor, informed by knowledge, skilled by training, with command of science, is the master of the world to-day more than ever before.

Two objections have been raised. One objector says: There is no school equal to the factory. Theoretical knowledge alone will not make a suc-

cessful manufacturer. But the time has gone by when practical knowledge alone, under the conditions that now limit it, can properly equip a competent artizan. That knowledge must be supplemented by the knowledge of the results of other men's experience and investigation. Hence it is that so many large manufacturing establishments abroad maintain their own special schools for the training of their own special artizans. Another objector says: This sort of education is required only for mill superintendents and foremen; it is not necessary for the rank and file of operatives, and there are not posts of responsibility enough to go around if every artizan is to be technically educated. To this I answer, addressing myself first to the mill owner: Suppose every man in your employ was technically educated, even to the extent of fitness to succeed the superintendent; would not your work be vastly better done, your product improved, your wastes reduced, your costs decreased and your profits increased?

To the artizan I say: It is true that posts of responsibility are comparatively few. But those that exist are not going to be filled by men incompetent to fill them. There is no need to worry about an over-supply of properly educated textile artizans until we outgrow our present under-supply, until we cease to find it necessary to send abroad for such men when we want them. Augustus Lowell wrote in his commemorative address, that after the Massachusetts Institute of Technology had been sending its men into the world for twenty-five years there is a ten-fold greater demand for its products than before such a supply existed.

A large proportion of the failures constantly occurring in textile enterprises are due primarily to the fact that the men in charge of the practical part of the work are not educated into competence. Another fact is equally impressive. A large proportion of the successful manufacturers of to-day are men who sprang from the ranks, who forced themselves to the front by virtue of their own qualities. Technical education will increase the proportion of such men.

This vast source of prosperity is ours by virtue of no special gift of Providence, bestowing upon us peculiar advantages for its development. It is in no sense an indigenous industry. Climate nor soil do not especially favor it. We produce none of the raw materials it requires. We grow neither cotton nor wool; we must import even our coal; and our unsurpassed water-power facilities, once so vital, are no longer a great factor. We know from history that industries tend to migrate to the points of greatest economic advantage. The English wool manufacture was concentrated for centuries in the South, in Sussex and Essex; but it has fled to the North, where coal is plenty. We already behold the cotton manufacture drifting southward, where factory and cotton field adjoin one another, and coal and iron are plenty. Capital will not shut its eyes to these economic advantages. How then shall we retain and foster an industry so vital to our future? There is but one method open to us. New England must rely for her continued supremacy in textile manufactures upon the skill, energy and foresight of her employers, and upon the dexterity, the mechanical aptitude, the technical education of her artizans.

Cotton Manufacturing in the South.

During the recent hearing before the committee on labor of the Maine Legislature, on the petitions for the passage of an act for lessening the hours of labor in factories, the following most interesting letter was read as coming from a prominent cotton mill agent in the South. It is well worth perusing as containing facts that are of vital moment in the competition that now exists, and which is becoming more and

more intensified, between the manufacturing of cotton in the North and in the Piedmont district of the South.

The advantages of the southern cotton mills are the low cost of labor, nearness to the cotton fields and low taxes. The only disadvantage is the extra expense of machinery, due to the cost of getting it there.

The people of the South are poor, very poor. They are farmers and eke out a very meagre living from their land. It is almost impossible to induce them to plant anything but cotton, as cotton has always a cash value. They are unable to get anything ahead and they mortgage their unplanted crop for the seed and fertilizer, and draw their supplies for living against the crop while it is growing. They are charged higher rates of interest on advances and when the crop comes in, they find that it has already been spent and the same process is gone through with again. Then in the mountains there is another class who drive 40 or 50 miles to market to dispose of a few apples, or chickens or moonshine whiskey. Of course, there are many small farmers in the South who are prosperous, but the average small farmer is one who sees but little money, who barters his product for his supplies and who lives under conditions which would be unbearable to the poorest Yankee farmer I know of.

There are thousands of poor families in those sections of the South where cotton mills are being built. If there are two or three boys or girls in the family the chance to earn 50 cents per day in a "cotton factory," as they call it, is an opportunity eagerly sought for. At home many of them live in a log house, without windows, and their manner of living does not permit many comforts. Therefore, a very small cash income is sufficient to more than satisfy them. Until all live in houses with glass windows, or in other words, until the supply of help of this class is exhausted, I can see no possible reason for thinking that wages in the South will increase. Opportunities for work with a cash remuneration are too few, and the people are too well satisfied with jobs to take their chances of losing them by asking for more pay. The time may come, but I believe it will be many years hence, when wages in the South will be as high as wages in the North for the same class of work. The people's wants are not as great as with us, and they never will be. They are perfectly contented to live for less, and their clothing, food and fuel cost less than with us. Many of the mills give tenement rent free to their operatives, but when charged for, the rent is usually 25 cents per room, per month. The houses are set on posts, usually all open underneath, and contain from 2 to 4 rooms. They are not plastered and cannot cost more than $200 or $300. In such houses it would be impossible to pass a New England winter.

You will notice the tendency to build mills, of late, in isolated places, away from the cities and away from neighboring mills. The object of this is twofold, to get a supply of cotton and a supply of help. The more mills that are built under these conditions, the more severe will be the Southern competition.

This matter of labor enters into the construction of the mill as well as its management. Bricks for the mill are made on the spot, they are laid by cheap labor and the timber is bought for less than the northern mill can buy it, so that the whole cost of the building is much less South, than North.

Taxation is a matter of no small importance. I have in mind one of the best cotton manufacturing plants in the country, costing $800,000, which is exempt from taxation for 10 years.

I have referred to the nearness of the mill to the cotton field as an advantage. In some sections, the mills already take more cotton than is raised in the vicinity, and whatever more than this they buy, they are on the same plane as the

Northern mill. But I have referred to the tendency, of late, to isolate the mills so that under such conditions an ample supply of cotton is obtained. I have seen mill after mill in a field with acres and acres of cotton growing around it and under such surroundings, the conditions must be exceedingly favorable. Not only do the mills buy cotton for less where there is a surplus raised in the vicinity, but I am told they buy cotton one grade better than their Northern competitors, which is, of course, equivalent to an additional reduction in price.

Now a word as to the success of Southern cotton mills. In years past the tendency, if not the custom of Southern mills has been to pay out in dividends all their earnings, the result of which is that those mills to-day are equipped with old machinery, old buildings, and are unable to compete with the modern mill. The mills which have been built in late years are equipped with the very latest and best machinery. They are managed by very able and active men, and are conservative in payments of dividends, so that their future is as well taken care of as the future of the best-managed mills, North. While many of the managers are from the North, there is a constantly increasing number of Southern men coming into the business, and I am informed that there are a great many young men of the best class learning the business from beginning to end.

During times of depression, such as that of 1893 and the present, the modern mills in the South have run without curtailment of production. By this I mean that the Southern mill will, of course, make all the money it can, but that when it comes to a question of price, the Southern mill can run at a profit when the Northern mill is running at a loss.

The management of a Southern mill told me that in one year his mill had made a profit of $5.30 per spindle, adding that he thought he held the record of the country. It is not the big mills (for most of the Southern mills are small) that are making all the money in the South, but the small mills of say 10,000 have been successful. I will give you an instance of this. There is a mill in the South of 600 looms making the same class of goods as the Amoskeag, in fact it copies the Amoskeag patterns and makes its price 1-6 of a cent per yard less than the Amoskeag price. In 1893, when the Amoskeag ginghams were selling for 4 1-2 cents per yard, this great corporation of 40,000 looms was obliged to shut down because their product was selling so much below cost yet the treasurer of this little mill told me that his mill run all through the dull times, selling their product at 4 5-8 cents per yard. 1-3 under the Amoskeag, as usual, and made money—not as much as they would like, but sold every yard of goods at a profit.

It has been pretty clearly demonstrated that the South can hold the market on coarse goods, or why did the Dwight and the Massachusetts cotton mills build branches South, or why is the Nashua Manufacturing Co. now organizing to build a Southern branch? If the Northern mills can compete, why did the Lawrence Manufacturing Co. abandon manufacturing cotton goods, for which it held an established reputation, and go out of cloth making altogether? We hear a good deal about it being possible to make coarse goods only, in the South, I admit that nearly all the goods now made in the South are coarse, but not all. I know of a new mill making 80x40 goods, 5 3-4 yards to the pound. There is now a movement on foot to organize a mill in the South, to spin and weave 100s yarn. There is a large army of help in the southern cotton mills, becoming more and more skilled every day, and I believe that the time is not far distant when this section will be heard from with its fine goods, as it is now with its coarse.

Hours of Labor in Maine.

The Maine Legislature is dealing with petitions for the passage of an act for the reduction of the hours of labor in factories, from 60 hours per week to 58 or 54 hours. This act asked for is intended to apply to women and children, but practically it will apply to all operatives in factories. Probably little or nothing will be done with the matter this session. In the arguments that were made before the labor committee, W. B. Pennell, agent Hill Manufacturing Co., Lewiston, stated that he was in favor of a national law restricting the hours of labor, but was decidedly opposed to descriminating for the State of Maine. A great many manufacturers agree with Mr. Pennell, and would be satisfied with 54 hours a week for the operation of mills, but reasonably object to being restricted to this number of hours while competing mills in other states are allowed to operate their machinery for a much longer time. At present, the State of Massachusetts is the only State that has a law restricting factory operations, even at 58 hours per week. We have advices direct from the Maine legislature stating that no report has been made from the committee, nor is there one likely to be made favoring the passage of such an act. There is an almost universal opposition to it on the part of the committee, which sees the injustice of any law of this kind to be applied so exclusively to one State. From our inquiries, we fail to learn that there is any substantial sentiment among mill operatives favoring any legislation of this kind. The agitation for an act of this character is confined chiefly to professional labor agitators. Any observing person can see that the present is not a propitious time for any contest between the mill owner and the operative. On the contrary, the conditions of manufacturing require the most harmonious relations to exist between the employer and the employee. It is quite as much for the real interest of the wage earner as for the capitalist that no further restriction should be put upon the manufacturing industry at this time.

Taxes on Mill Property.

The assessors of Fall River, Mass., assessed the mill buildings of the Troy Cotton and Woolen Manufactory, exclusively of land, $90,000. The lot of land on which the building stood was valued by itself at $80,000, and the machinery at $327,000, making a total valuation of $497,000. The company protested against this valuation and asked for an abatement of taxes. The matter came before the supreme court of the State, and has been recently decided to the effect that "as the dominant intention of the statutes is that the valuation of property, for purposes of taxation, shall be its fair cash values, considered with reference to all the uses to which the property may be put by any owner, a rule applied in another case should be extended to the machinery used in manufacturing establishments which is locally taxable in connection with the land and the buildings and the land."

At one of the court hearings, it was found that if the buildings and machinery were removed the land would be worth for other than mill purposes $150,000; that the materials of the buildings would pay the cost of removal; that the value of the machinery to be set up in the buildings to be used for mill purposes was $266,000, but if the machinery was to be removed from the premises its value would be $186,000; and that the value of the buildings, taken together, if the buildings were to remain on the land and be used for mill purposes, was for the land $15,000 and for the buildings $63,000, to which must be added the value of the water power connected with the land, $33,846.

In the present case, the whole plant was found to be more valuable if kept together and used for mill purposes

than if the machinery were removed from the buildings or the buildings with the machinery were removed from the land and each item should be valued as it is used in connection with the others.

Sea Island Cotton.

The meeting of sea island cotton growers in Eastern Georgia, last month, has attracted wide attention. It adopted a resolution calling on Congress to give sea island, or long stapled, cotton protection in the new tariff bill. The Atlanta Constitution states that the planters claim that they have found that the long stapled cotton can be grown quite as successfully a hundred miles inland, on the sandy lands of Southern Georgia, as it can on the islands. Its commercial importance in Georgia is shown by the statement that when carefully handled it brings two and a half or three times as much per pound in the market as the short cotton, and in the southern portion of the State an acre of land will produce as much long staple cotton as it will of the less valuable variety. Consequently it is one of the most important industries in that section. If planters really believe this they must be a very dull crowd.

The Constitution admits that no protection is needed for the short cotton, which constitutes the bulk of the crop, but this is not the case, it says, with the long staple. "That is extensively grown in Egypt, from which country large quantities of it are imported for use in mills that make fine goods. Its admission, duty free, will reduce the selling price of the competing home product. And that is why the Georgia planters are asking for protection. They are not yet so thoroughly converted as they might be—and, we think, will be—to the doctrine of protection, but they can see where their interest lies in this matter."

—Seven hundred sheepmen in Montana own something over 2,500,000 sheep.

Tariff on Hosiery.

There is more than one problem for the Ways and Means Committee at Washington to solve in the revision of the tariff. One of the most difficult things to adjust that will be satisfactory to all concerned will be that relating to cotton hosiery. The domestic manufacturers, or at least a large number of them, desire that a minimum duty should be imposed upon all hosiery costing less than $1.50 per dozen. This dividing line is higher than that named in the McKinley Bill, where goods of this kind valued at not more than 60 cents per dozen were subject to a duty of 20 cents per dozen and 20 per cent ad valorem. The next dividing line was at $2. per dozen pairs, and hosiery between these two lines were made subject to 50 cents per dozen and 30 per cent ad valorem. Many of the large importing houses also desire a higher dividing line than that expressed in the McKinley Bill. This desire among importers is confined apparently to the old line houses who do not care to handle the cheaper hosiery, and would prefer not to see it entered at the custom house at a lower rate than the cheapest of the line which they carry. The consequence is, they are in sympathy with the efforts of domestic manufacturers, in desiring that a uniform duty be imposed upon all the cheaper grades. Of course the importers who handle the lower grades of hosiery are opposed to this suggestion, on the plea that it discriminates against the poor. Hosiery costing less abroad than 80 cents to $1, per dozen is too low in quality to be economical for any class of purchasers. The expert opinion of the Board of General Appraisers while entertaining this view believe that the dividing line should not be fixed higher than $1. per dozen pairs.

—Sheep-shearing machines are fast coming into use on the sheep ranches of Argentina.

Cylindrical Cotton Bale.

There has been a considerable amount of interest taken in the cylindrical cotton bale by our Southern exchanges, presumingly representing what is being done in this direction by those who are pushing this form of bale upon the attention of cotton planters. There is a large amount of money back of this effort to have the cylindrical form of bale accepted by the trade in place of the ordinary square bale. It is an innovation, like all others of its kind, that slowly finds favor among such a conservative class as those engaged in agricultural pursuits. This form of bale does not meet with great favor among cotton buyers and factors in New York City and Boston, and but little expectation is manifested that it will be adopted by manufacturers right away. There has long been a strong feeling that some reform should be made in the present method of baling cotton, but explicit faith is not placed in the round bale, as meeting the wants of the trade. A representative of a large cotton concern in New York City expresses himself as follows:

"One of the first disadvantages is that it is round, which is a decided objection from a shipping standpoint. A square bale can, of course, be packed with greater economy, either in a ship's hold or a railroad car, than can a round bale. It may be urged that the round bale is much more densely compressed, and that this would offset any disadvantage in its shape, as far as shipment is concerned, but there is no reason why a square bale cannot be condensed as solidly as a round one. Then again, there has been much difficulty in opening these bales. It has been found that they will not unwind readily, and that considerable loss has resulted to spinners on this account. It has been claimed for the round bale that it cannot burn, as the air is said to be compressed out of it. While, however, a cylindrical bale may not take fire so readily from sparks or such causes as a square one, I doubt whether these bales would stand a fire in a warehouse better than the ordinary bale. We are believers in the Indian method of baling. In India, cotton is baled by a few large houses, and is sold on their reputation, while in this country it is baled at every plantation and must be sampled, and the round bale will not permit of sampling, from the fact that it is rolled."

Walter T. Miller, treasurer of the New York Cotton Exchange, says: "The cylindrical bale has been recommended from an economical standpoint, because the staple is not injured as much by rolling as by compressing. From the standpoint of a merchant, however, it is wholly impracticable, from the fact that it cannot be sampled. In fact, it is not intended to be sampled."

Alfred B. Shepperson, the well known cotton statistician, takes another view of the bale, and is a believer in the cylindrical process of baling. "There is no commodity" he says, "in the world of general use which is put up in such a wretched manner as American cotton. The method of baling cotton is extravagant, wasteful, and does not serve to protect the contents of the bale. It makes the cost of transporting the cotton by rail or vessel very much greater than it should be, and it utterly fails to protect the cotton from damage. Nearly all of the fires which occur in cotton warehouses and in ships loaded with cotton may be attributed to the wretched method of baling by which so much of the cotton is exposed. These conditions show that some reform is needed. A great many arguments that were advanced against the cylindrical process when it was first introduced are not applicable now, because the process has been greatly improved. As to the claim that round bales cannot be sampled, I want to say that this is incorrect. These bales can be and have been sampled. I hold also that the

round bale is more economical from a freighting standpoint than the square bale. The latter are of various sizes, which, of course, is a disadvantage in stowing, while the cylindrical bales are of uniform size. A shipper knows at once just how many he can put in a car or in a given space. There is also a great saving in the tare. The round bale has no iron hoops, wire or steel bands or metal of any kind. With a square bale the hoops at best can be sold only as second-hand material, while often they are sold for old iron for practically nothing. The bagging on a round bale is also of better quality, and can be used for wrapping brown cotton goods, which are put up in bales, while ordinary bagging is worth almost nothing after it is once used. Among other advantages which may be claimed for the 'Bessonette' bale would be a material saving in storage, fire and marine insurance, while the damage to the contents from water, dirt, grease and similar causes would be greatly reduced if not practically eliminated."

The list of taxes payable on cotton cloth and yarn by the owners of cotton mills in Mexico for the first half of the calander year 1897 has been made public. There would from this appear to be in the Republic 105 cotton mills, assessed to pay per half-year (for the tax on cloth and yarn alone, exclusive of the tax per spindle and others) the sum of $597,022.

Wool Market.

The market for wool is one of great firmness, the same as has existed for a number of weeks past. The sales have been phenomenal, as nothing like them have ever before occurred in the history of the trade. There appears to be no material let-up in the amount of wool that passes from one ownership to another, and though many of the purchasers are speculators, so called, *i. e.*, between dealers, much of the larger portion that has been sold was to manufacturers for consumption. Manufacturers are buying in excess of their wants, and the natural result will be, in time, great dulness in the wool trade, as manufacturers will be fully supplied. Large quantities of foreign wool are being sold, due largely to the expectation of a tariff being placed on the foreign commodity. At the last London Colonial Wool Sales, there was a strong American demand, in anticipation of wants on this side of the water. The sales on that account were extremely lively, and when the middle of the series had been reached, all wool suitable for America had gained fully 10 per cent. Other descriptions, not wanted for American manufacturers, were unaffected, as the European trade was indisposed to follow the high prices that were being paid. Not only Merinos, but fine crossbreds, suitable for American use, realized high prices. The demand for wool is evidently substantial. The mills are well supplied with orders for goods, though prices are exceedingly low; yet, it is believed that they represent a profit. There is much confidence in manufacturing circles. The general testimony among manufacturers is that not only times show an improvement, but the outlook is much better, and that the worst has been seen. The concensus of opinion is that a wool tariff will be enacted at the special session of Congress, amounting to at least eight cents per pound, but more probably restoring the McKinley rates as the only solution of the disagreement between wool growers and manufacturers. The matter is thrown into the hands of the Ways and Means Committee, and this committee is disposed, as near as can be ascertained, to place a duty of eleven cents per pound on foreign wool. Ohio XX wool and above is selling at 21 cents per pound. The amount of XXX is very small, and delaine is nearly out of stock, and what little there is is firm at 22 to 23 cents for Ohio. Wool, to-day, is evidently good property. Heavy weight woolens have made a

good start, and, although prices are in a measure no better, quicker sales are realized.

We note in our exchanges from Beunos Ayres, that the wool clip of that region consists generally of Lincoln growths, including some first-rate, long, lustrous qnalities; rather heavier in grease than those of last season.

Cotton Market.

The statistical position of the cotton market is an excellent one, and if anything can be depended upon it, and if normal conditions remain, there is no probability of the price of the raw material going below its present quotation to stay. There is much to occasion an advance. Spinners have not, evidently, been disposed to buy much in anticipation. The takings of American mills, both North and South, have been thus far during the season practically the same as those for the same period last year, viz.; about two million bales. Hubbard Brothers & Company, cotton merchants in New York, say in one of their late circulars, that the American spinners have thus far taken more than last year, and there is every indication that from now on their purchasers will be heavier. Statistics do not bear out their assertion, as those of the New Orleans Exchange sustain what we have already stated, that the takings are practically the same as last season, thus far. There are a number of factors in existence that point to increased rather than decreased prices. The conditions of manufacturing are almost sure to improve as time goes on, and the supply, not only from this country, but with special force from India, will be no more than sufficient to supply the demands of spinners. It is a serious question whether the supply will not fall very materially short of the demand. The supply from India will surely be curtailed, due to well known conditions existing in that country; still, there is a certain apathy in speculation which seems to indicate that operators in cotton do not look forward to any immediate advance in the price of staple.

A. B. Shepperson, the well known statistician, has written a most interesting letter upon the cotton situation, to the Cotton Gazette, Liverpool, England, as follows:

"From letters which I am now receiving from many of the most prominent mills in the South, in reply to my inquiries on the subject, I am satisfied that the Southern mills have taken from the present crop from 50,000 to 75,000 bales of cotton less than for the corresponding time of last season, Mr. Hester, the Secretary of the New Orleans Cotton Exchange, publishes figures to the effect that the Southern mills have taken from the crop some 15,000 bales of cotton more than for the corresponding time last season, but I am thoroughly convinced that his figures are incorrect. It may, therefore, be safely assumed that the figures purporting to give the quantity of cotton brought into sight, as made up by the New Orleans Cotton Exchange and the New York Chronicle, are undoubtedly incorrect to the extent of the over-estimate which has been made both by Mr. Hester and also by the Chronicle in regard to the takings of cotton by the Southern mills. My investigations of the subject convince me beyond any doubt whatever, that the Southern mills now hold a great deal less cotton than at this time last year. While a matter of 50,000 to 75,000 bales of cotton in the total of the crop would probably be without influence upon the price of cotton, yet the fact that a number of Southern mills will be buying cotton in Southern markets during the remainder of the season will undoubtedly have the effect to strengthen and probably advance prices at the South, and the steadiness of the Southern markets will naturally strengthen the New York and Liverpool markets. In ordinary years the Southern mills purchase, by the end of December, practically enough cotton to

meet their requirements throughout the entire season, and, therefore, are not in the market to any extent after January 1st, and indeed many of them are out of the market after December 1st. My advices are to the effect that there is comparatively little cotton now remaining on the plantations, certainly far less than at this time last year. My impression is that the weekly movement will soon fall below last year's figures and not exceed them again. It is very probable that the movement in May, June and July will be considerably less than for last year, and unless the new crop is an exceedingly early one, the movement in August may be as much as 150,000 bales less than last August, when, as we all know, at least 160,000 bales of new cotton are marketed.

"I see no reason to change the opinion which I have formed some time ago, that the commercial crop will not be more than about 8,500,000 bales."

Mr. Shepperson, as will be seen, has not full faith in the correctness of the statistics of the New Orleans Cotton Exchange, or those of the New York Chronicle. His crop estimate, however, of 8,500,000 bales for the season, conforms to popular opinion. Based, however, upon the percentage of the crop in sight for the last three seasons; the prospects are favorable to a larger crop than this, rather than a smaller one. In the last report at hand, from Thomas Ellison, Liverpool, it is stated that: "The market is being adversely influenced by the plague and famine in India, and by the universally unsettled state of politics—disturbances of one sort or another being in existence in every country in Europe, in a good portion of Asia, at all the points of the compass in Africa. So far as cotton on its own merits is concerned, the situation is sound enough, but until politicians cease from troubling the public mind, business men all over the world will operate only to meet immediate requirements, all enterprise will be checked, and speculation will remain as dormant as it has been for several months past.

Heavy Weights in the Market.

The present season has been one where the bulk of sales has been either in the very cheapest grades of good fabrics, or else in the finer grades. It seems as if the buyers had enough of medium priced fabrics, and were only filling in their stock, and from the size of the orders placed this is undoubtedly the case. The principal fabrics in point of number in the market have been in the cheaper grades of wool cheviots. It would almost appear, in looking over the different lines, that manufacturers have in nearly every instance decided to make about the same priced fabric and the same line of styles, so great is the similarity.

The cheap cheviot class of woolens is the 70 cent. fabric. Here are dozens of lines, and while some go as low as 65 cents, the general tendency is to purchase goods at 67 1-2 or 70 cents, and only in cases of exceptional style and coloring is the buyer willing to pay 75 cents. In this grade of fabrics the line which has attracted the most attention is that made in the Lapham mill, and sold by H. A. Caesar & Co., at 65 cents. This line is in fancy colors, and is called the "Cricket," as is also a line of wool cheviot piece dyes at 50 cents. The "Pointers," sold by this same firm, are made of cotton warp, and a shoddy worsted filling in full line of colors, three-quarters wide at 18 cents.

Messrs. Catlin & Co. are showing the 3-4 all wool cheviots, "Ellerslie," at 35 cents, the 6-4 all wool "Vendome" at 70 cents, and the 6-4 all wool "Fairholme" at $1.30. Their friezes are $1.12 1-2.

Devoe & Peck have a very attractive line of unions, 3-4 wide at 20 cents, with noil stripes at 22 1-2 cents.

Fillebrown & Co. are selling the "Litchfield" fancy worsted cheviots at 92 1-2 cents, and the "Great River" cheviots at 90 cents.

O. H. Hayes & Co. have the "Mapleside" 3-4 cheviots at 15 cents; the

"Avondale" fancies 3-4 wide at 20 cents, and the 3-4 "Viking" twills at 18 cents.

McIntosh, Green & Co. are selling the 6-4 "Proctorsvilles" at 75 cents, the 3-4 "Grenobles" at 30 cents, with double and twist warp, 32 1-2 cents. The "Milldales" 3-4 wide are 32 1-2, and the "Dykers," same width, are 32 1-2 cents for plain styles, and 35 cents for fancies.

The "Caryville" meltons 3-4 wide, 14 ounces, are 22 1-2 cents; 10 ounces, 19 cents. "Douglas" suitings, also 3-4 wide, at 25 cents, as is also the "Caryville" frieze. "Dewey," 3-4 solid colors, is 30 cents. "Vermont Gray" and "Cambridge," 3-4 wide, at 27 1-2 cents less 5 per cent.

Slater & Sons are showing the usual line of kerseys, but the one shown at $1.50 undoubtedly eclipses anything in the market, as this is the general verdict of buyers. They also have one at $1.25 which is creditable. The "all wool" Thibet is 75 cents, and the tricots are $1.25 and $1.50.

Frederick Vietor & Achelis are selling the "Brunswick" 6-4 piece dyes at 82 1-2 cents, and a better quality of this same make at 85 cents.

Jacob Wendell & Co. are showing a line of "all wool" 6-4 fancies at 55 cents, the "Riverside" melton suitings at 62 1-2 cents, fancies of the same make at 67 1-2 cents. They have a line of friezes at 75 cents, "all wool" meltons at 90 cents, and twilled overcoatings at 80 cents. The 3-4 "Comet" cheviots are 35 cents, and the "Eclipse" cheviots, same width, are 32 1-2 cents. The "Superiors" are $1.35, $1.20 less 5 per cent, and $1.12 1-2. The "Lenox" line is $1.15 less 5 per cent; "Newports" at $1.95 less 5 per cent; "Shirleys" at $1.37 1-2 less 5 per cent., and "Melrose" at the same price as previous make.

Stevens, Sanford & Handy have the 6-4 all wool "Antlers" cheviots at 85 cents; the "Glendons," which have been very popular in former seasons, are 90 cents, as are also the "Berwyns" and the "Pelhams;" a line of cassimeres are $1.15.

Oelbermann, Dommerick & Co. sell the 3-4 wool mix cheviots, "Trisbach," at 35 cents, the 6-4 "Harwick" at 90 cents; "Hampden" at $1.60; "Windsors" at $1.05, and "Boylston" $1.12 1-2.

Thomas Dolan & Co. are selling a line of attractive "all wool" cheviots at $1.10.

Sawyer, Blake & Bramhall have friezes at $1.00 in plain colors, and the Oxford mix at $1.05. The Clinton meltons, made at Clinton, Michigan, are $1.12 1-2.

Wm. Peters, of Columbiaville, Mich., also has a line of meltons at $1.12 1-2 and $1.20.

Among the Dry Goods Trade of New York.

The trade takes it as a rather good joke that Converse, Stanton & Cullen, should be the firm to be hauled over the coals, by the custom's authorities, in the matter of undervalued imports, inasmuch as Walter Stanton of that concern, is president of the Textile Tariff Association. Of course the firm is entirely guiltless. According to report this firm some time ago made charges of undervaluations which could not be discovered. One of the appraisers soon declared a sizable case of undervaluation against the firm. The general appraiser to whom the matter was referred found an undervaluation of only 3 per cent. The firm was not satisfied with that however, and so appealed to the secretary of the treasury who finally sustained the first appraiser, ruling that the goods were undervalued more than 40 per cent. It is said that a keen competitor of the firm has bought some of the goods and entered them at a figure which will sustain the appraiser's undervaluation. The matter is now in the hands of the United States Attorney.

M. C. D. Borden's latest Napoleonic move while it has passed into history,

is yet the most talked about event of the month. It serves to again emphasize his habit of independent action. Of course, the market showed immediate improvement. There is no doubt that the withholding of many details of the Fall River production which for years have been spread on a scroll monthly, for the benefit of the world, will prove of decided benefit to the manufacturers. It was not very unlike sending a plan of their breast works over to the enemy. In fact the benefit from this cause has already begun to be reaped. Speaking of Mr. Borden, it is strange how rapidly people here are being won to his thinking that curtailment of production and scaling down of wages never bring the relief expected.

Among the deaths of the month is that of Robt. M. Moore, for 13 years with A. T. Stewart & Co., and since 1879, New York manager for Wm. Wood & Co.'s Spring Garden Mills, of Philadelphia.

Henry C. Yale of Townsend & Yale, died last week, aged 68, after an illness of 10 days. His first experience was with Blake, Patterson & Co. of Boston. The firm of Townsend & Yale was established in 1855. He is survived by a son and two married daughters.

A failure which will fall much below $10,000, is that of Brown & Curtiss, knit goods jobbers of Leonard St. G. B. Townsend is their assignee. The firm expects to pay in full.

Simpson, Crawford & Simpson are planning to put up a great building on the site of their present store.

Edward Brown has been appointed receiver for Schloss & Sons, of 15 Mercer St. Morris Adler, a judgment creditor, brought suit.

John A. O'Connor, of 45 Lispenard St., has been appointed local representative of Stix, Baer & Fuller of St. Louis.

Walter R. Dills and Elijah H. May, of 335 Broadway, have assigned to Sam'l F. Jayne without preference.

John Delahunty has been appointed receiver of Wm. Campbell & Co., in a suit brought by H. C. Bennett & Co., judgment creditors, to set aside the assignment made by the firm, Dec. 13, 1895.

T. E. Thomas, late of Elmira, is now resident knit goods buyer for Hale Bros. of San Francisco.

W. H. Hinchman & Co., cotton goods brokers, now have a new location at the corner of Broadway and White St.

Socolaf & Gordon have taken up a new abode at 22 Eldridge St.

W. E. Smith long with Catlin & Co., has arranged to represent the Hanover Woolen Co., Illinois, in New York, and other eastern markets.

Singer & Feldman have moved one door to 317 Canal St.

Wm. Davies, the Lispenard St. resident buyer, will hereafter represent S. Hirschberg & Co., of Mobile, and H. D. Jonapet & Co. of Cincinnati.

Jacob Blum, importer, has moved to 108 Division St.

The Boston Mfg. Co., of Waltham, has made a shift in its selling agents to Lawrence & Co., of Boston and New York.

W. G. Jenkins, the cotton goods broker, has returned to town after a tour of the Southern cotton mills.

Lefft, Meller & Co. this week moved into a new addition.

There is a decided tendency toward social organizations in the trade. The Dry Goods League of America, is the name of a new coterie formed of wholesale dry goods salesmen which will soon have quarters on Broadway. There is also talk of one or two other dry goods clubs.

Buyers are plenty in town, and it is evident that the volume of trade is steadily rising. It may be said in a word that the tendency in dress goods is toward plain weaves. Although the better plaids are in strong demand, novelties in checks and figures in combinations of silk and wool are fast replacing open work weaves in worsteds, etc.

COTTON DEPARTMENT.

Colored Goods in the Dress Room.

There are a number of systems for handling the work in dressing rooms of mills running on colored work such as ginghams, shirtings, cheviots, etc. The methods most generally used however are, the short chain, called in many places the hand dressed warps; the Scotch or long chain system; coloring on the raw stock; and reeling the yarn into hanks which are, after dyeing, hank wound on to spools, which are placed on the warper creels according to the pattern desired.

The short, or hand dressed chain, is usually from five to twelve hundred yards in length; the warps of each color after dyeing are sized in the chain, ball sized as it is called. They are then run over a series of drying cans and dried, after which they are ready for the beamer. The warps of the different colors to form the whole warp are put on the frame and picked into a comb or heck, in the order called for in the pattern. The warp is then wound on the loom, after which it is ready to be drawn in and woven. In the long chain system a warp of from five to twelve thousand yards is used. The warp after dyeing is beamed on to section beams and is then ready for the slasher or tape dresser, where it is sized in practically the same manner as a white warp would be.

The different methods spoken of above differ a good deal in their method of handling the stock, in the cost per pound for labor, resultant character of goods, and in amount of waste made. But, before being able to decide which is the best and most economical system to use in any mill, it is necessary to know the kind of goods, and conditions under which the work is to be done. Supposing that a line of ginghams is to be gotten out by a mill using the long chain system. The designs having been made the dressing room particulars will be: the number of yarn required, width of goods, sley of reeds and harness. In the line of goods the warp yarn is to be 24s, the width in the reed 28 inches, reed 25 dents per inch, which will require 1400 ends in the warp.

The following design ticket is also the drawing-in ticket, and from it are made out the warping and slasher tickets:

Style 1. Pattern 1. Warp 1400 ends, 24s yarn.

90 dark green	
8 steel gray	
6 dark green	
2 red	
2 white	
2 red	
2 white	6 repeats
8 dark green	
6 steel gray	
90 dark green	
6 steel gray	
4 dark green	
6 steel gray	

232

1188 ends dark green;
156 " steel gray;
24 " red;
24 " white.

From this a warper ticket can be made out:

Style 1. Pattern 1.

1 warp 396 ends dark green
1 " 396 " " "
1 " 396 " " "
1 " 156 " steel gray
1 " 24 " red
1 " 24 " white

The warping pattern is used to make out the warping tickets, one of which is

attached to each warp. These tickets should show range, style, pattern, number of end, number of yarn, color and any other particulars such as may be thought necessary. In giving them out due regard should be had as to working them to the best advantage in saving labor in tieing in or breaking out in the warper creel. For example if one warper had just finished running a warp of 350 ends, and another was almost through with a warp of 175 ends, it would be manifestly a saving of time to give the former the 396 end warps to run, and to the latter the 156 end one. This may appear a small point but worked judiciously it represents quite a saving on warping in the course of a year, and when a mill is a little short on warpers helps out quite a bit on production.

In regard to the process of warping, most mills prefer the warp being wound by means of a quick traverse motion onto a ball or spool some 36 inches long, using a wooden arbor for a core; where the mill does its own spinning the system is cheaper than when the mill buys its warps, because in the latter case there is cartage and return freight on the empty arbors. The yarn wound in a ball is more easily handled and with less danger of tangling or snarling than when handled in the chain.

In some mills the warper tenters run two warpers on pattern chains, but most mills are better satisfied to have them run only one. On some kinds of work where there is not much changing on the number of ends and the work runs extra well it is good management to have the girls run the frames. On the ordinary run of work a warper on one frame is kept fairly busy especially when water bands are used on the warps and leases spring oftener than once every five hundred yards.

The speed the warpers had best run at, is only settled by the individual conditions under which it is running. A frame warping, say, 30s yarn from a six inch spool would be working under different conditions from one using the same yarn wound on a five inch spool. When warping tender yarn, very often a larger and decidedly superior product can be obtained by cutting down the speed of the machine. The process of warping is one to which it pays to give rather more care and attention to than is done by the average mill. Over speeded frames, overworked help and carlessness in the running of the work generally have as a result warps with too many lost ends, bad knots and bunches, and finally in a reduced yardage per day per loom and an increased cost in the weave room.

(To be continued.)

Figure Weaving.—Lappets.

(Continued.)

Another motion which has been applied to the print cloth loom for the production of lappet effects, is the Bolton trailer, a two-frame cam motion.

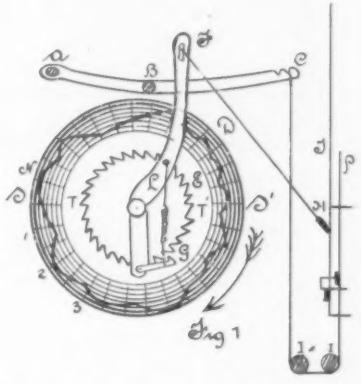


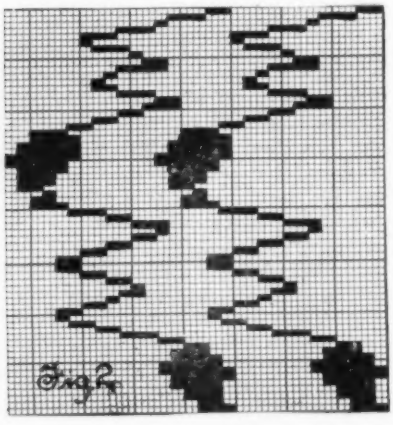
Fig 1

In order to more clearly illustrate its pattern mechanism the sketch at Fig. 1 is given.

The lettered parts are as follows: *D*, the cam which forms the pattern; *B*, the treadle ball which follows the cam as it revolves. *A* being the fulcrum of the treadle, and *C* the point of connection for rods leading to the needle rack. Geared to the cam *D* is a ratchet wheel *E*, which is turned one tooth at each

pick, by means of the catch G, the lever L receiving its oscillating motion from the lathe through the connection at H and F.

When the crank is at front centre, and the figuring needles are clear of the yarn, the turning of the ratchet wheel takes place, thus sliding the



needles horizontally to their next position before they are lowered into the warp shed, to be tied down by the filling passing over them.

The cam D is round in the first place, and the material used is cast iron about 1-8 inch thick. To put the pattern on the same, it is necessary to divide the cam into as many parts as there are teeth in the ratchet gear. A number of circles are then described at the rate of 30 to 1 inch which represent a movement of 4 threads on a 64 ground, moving one circle.

Looking at the sketch, Fig. 1, standing at a left hand loom, the heavy line shows the pattern cam after it has been ground to the required shape.

From N to 1 are 3 picks, and drop down 5 circles or 20 threads; the figuring needles will slide that distance to the right again. From 1 to 2 show 2 picks and the deep line is seen to return 3 circles or 12 threads, which draws the needles this distance to the left, etc. After getting a pattern cam the required shape, it can be sent to the foundry and any number of that particular pattern cast.

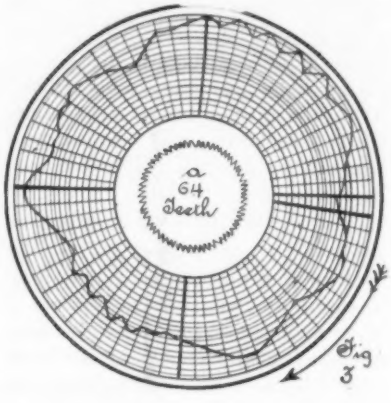
The distance from A to B is 6 3-8 inches and from A to C 11 1-2 to 13 1-2 inches. Diameter of cam from S to S', 11 1-2 inches. Diameter of cam from T to T', 9 1-2 inches.

The space for cutting the pattern is from S to T, thus giving the treadle ball one inch fall.

The distance from A to B (A being the fulcrum and B the point of contact) being 6 3-8 inches, if the cam is cut away 1-4 inch, the fall at C will be twice that distance, providing the connecting wire be hooked at 12 3-4 inches from A.

Therefore, making a basis to work from, say 64 sley with a reed of 30 dents per inch, the circles on the cam would be described to the 1-30 part of an inch on the space, S T, each circle representing a movement equivalent to 4 threads or 2 dents.

It will be noticed that by using the full depth from S to T, an effect 2 inches wide is obtained. This being



the extent of the trailer as at present constructed.

Fig. 2 shows a sketch of a lappet effect, and Fig. 3 the pattern cam for same. When using two different effects in the same fabric, a separate pattern cam, treadle ball and needle rack, are required for each. The cams are placed one on each side of the ratchet wheel

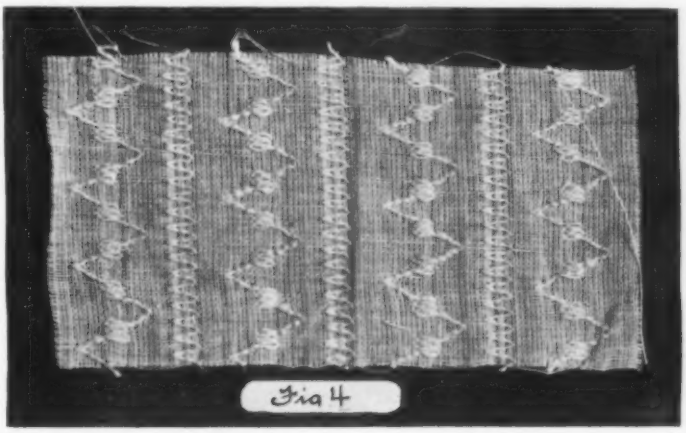
with the catch *G* working between them.

Fig. 4 illustrates a cloth made on the trailer using two frames. In the future more will be said regarding this class of weaving in combination with leno effects, as the two combined will, without any doubt, produce some of the neatest effects in cotton dress goods ever seen this side of the Atlantic.

TEXTILE.

Self-Feeders.

Having been looking over a number of self-feeders on cotton openers and



carefully noting the points to which such valuable claims are attached the conclusion has been reached that the progress made is not conformable to the thing called for. To begin with, the way the cotton is given to the hopper, we affirm, without fear of contradiction, that the old story is still prevalent of shoving the stock along, expecting the evening up will be done by the machine. After weighing accurate lengths of the laps made on these openers and regulated by these automatic feeds we find there is a very considerable variation; in fact, much more than might be under more careful handling, and certainly more than there is any surety the subsequent doublings will or are expected to adjust. The lumpy material dumped into these hoppers shows at once there is either too much dependence placed in their efficiency as weighing machines, or the task imposed on the tender is out of all keeping with what should be, or, and this is the most likely, the work to be done here is deputed to ignorant untrained help who will not be impressed with the importance of feeding with opened stock and keeping the hoppers full.

It has, as far as the experience of the writer is concerned, been a standing trouble to prevail upon a fairly intelligent operative to occupy this position. The kind of help we in general find here is of the shirky sort always ready to perform the duties in the easiest way ignoring important features in the feeders.

If we take it upon ourselves, as a great many do, to feed cotton to a picker opener through a self-feeder a very short inspection will demonstrate the impossibility of the feeder fulfilling the claims and advantages to which it aspires. The excessive striking by the beater of the hard lumps under pressure between the feed rolls which is so destructive to the fibre, is one of the principle points of recommendation. Were the material given to the hoppers in any kind of a systematic manner em-

bodying the ideas of a continual regularity and there by the absence of as little strain as possible on any portion of the fibre more than another there would be good grounds for the urging of this claim. But when the spiked creepers pick up a lump, and carry it forward or upward to the combs or brushes by which it is intended to be evened off and made fit to be delivered to the conveyors; instead of a nice regulating taking place these combs or brushes can possibly do no more than force the spikes to hold on to and deliver more than the regulation weight. This gentle operation does little harm at the point mentioned, but when these lumps are combed off and got ready for the next operation they are often delivered back to the hopper, thus leaving a deficiency of stock, and the trunks or pneumatic conveyors through which the cotton is blown will deliver short weight to the feeding apparatus.

It is to remedy, if possible, the defects of inattention in preparing the raw material for these important operations that these inaccuracies are pointed out By the action of the creepers and the regulating devices a considerable amount of dirt and other kinds of foreign matter is sifted out of the cotton before it enters the picker. The mixing qualities of the automatic feeders are best exemplified in the manner in which waste is manipulated. When put into the feeder with raw cotton it becomes intimately blended therewith. We might very pertinently inquire why this little machine is so capable of mixing waste while in the matter of raw cotton it appears less efficient? The answer is, the lumps of the latter are caked and instead of the regulating devices freeing the fibres and leaving the proper quantity on the spikes they, in a measure, force and clog them harder. The blending and intermixing accomplished with different grades, a thing little attended to when feeding by hand, goes to prove what the feeder is capable of in this direction, and how much it can be depended on to mix varying grades and mill waste. We used to machine our mill waste and afterwards mix it in the regular way with the raw. When we consider the effects machining has upon the fibre, how every beating enfeebles it seven or more per cent, and knowing that this waste has been through the mill already, and although we have subjected it to another beating, yet it must go through again, it is no wonder carders hate to run waste in conjunction with even work. Our automatic feeders have come to help us some in this long felt difficulty. They open the returned waste, mix and intermix it much better than it can possibly be done by hand, and they directly save one beating of the fibre. Nov.

Cotton Carding.

X.

The slubbing process consists of the attenuation of the drawing frame sliver. There is no doubling on this process, a single strand of sliver going in at the back. It is the first process in the mill which winds onto a bobbin and requires twist to be put in.

The slubbing machine is built with from 60 to 80 spindles, containing as many bobbins, which are made to allow the roving to spread from 10 to 12 inches, the rail being set to traverse the required distance. This machine is comprised of three different motions, which consist of the rollers, the spindles and the bobbins. The rollers are three-fluted steel ones, running the whole length of the frame, on top of which run small rollers covered with leather, being made just long enough to draw four ends of sliver for each roller. They are set in slits called cap bars, which are adjustable to the different lengths of staple, and are weighted, being run by friction with the fluted rollers, the steel rollers also being adjustable.

The rollers are driven from a gear on the frame shaft, called the twist

gear, which can be changed, making the rollers deliver more or less, according to the twist wanted in the roving. The spindles run the same speed all the time, and it cannot be changed without changing the speed of the whole frame. If it is required to put more turns of twist to the inch the roller must be made to deliver less sliver, and if less turns of twist to the inch, the reverse. The twist gear engages with an intermediate gear which drives a gear on the top cone, on the end of which is another gear which drives the gear on the end of the front steel rollers, the other two being driven by a small gear on the front roller, gearing into what is called the crown gear, fastened on a stud, on the other end of which is the pinion or change gear, which drives a gear on the back roller. The middle roller is driven by a small gear on the back roller, through an intermediate gear which drives a small gear on the end of the middle roller. This is usually one tooth smaller than the driving gear on the back roller, which creates what is termed a draft, thus: If the back and middle rollers are the same in diameter, and the gear on the back roller has 33 teeth, and the gear on the middle roller has 32 teeth, the draft will be obtained thus: $33 \div 32 = 1\frac{1}{32}$ draft, or, when the back roller has turned 32 revolutions the middle roller will have gained one revolution, and the sliver will be as long as when it entered the back roller plus the circumference of the roller; and this is the meaning of a sectional draft.

When the total draft is spoken of, the number of inches or yards the front roller will deliver from one inch or one yard of sliver taken in by the back roller, is meant.

For the purpose of illustration take a frame with the following data:

1 inch diameter of back roller,
56 gear on " "
40 pinion or change gear,
100 crown gear,
40 gear on front roller,
1¼ inches diameter of front roller.

By leaving out the pinion gear, a dividend may be obtained, which, if divided by any pinion gear, will give the draft said pinion will furnish, thus:

$\frac{56 \times 100 \times 1\frac{1}{4}}{1 \times 40} = 175$ dividend. $175 \div 40 = 4.37$ draft.

The spindles receive their motion from a gear on the frame shaft, engaging with a large intermediate gear which drives a gear on the end of the spindle shaft. The two spindle shafts run in a box the whole length of the frame, the back shaft receiving its motion from the front one and driving the back row of spindles. At intervals between the spindles are placed bevel gears, which engage a small bevel gear on the spindle. On the top of the spindle is a slot into which the pin in the tube of the flyer fits to turn the flyer and keep it in place.

The roving, as it comes from the roller, goes through a small hole on top of the flyer, then takes half a turn round the outside of the top of the flyer, then down through the tube in one of the arms, and as it emerges at the bottom it is usually wound three times around the finger or presser, which guides the roving so that it will wind evenly on the bobbins. These flyers must be balanced to a nicety, or the spindles and bolsters, which keep the spindle rigid, will become worn in a very short time.

To find the speed of spindles: Multiply the speed of frame shaft, which, for example, is 268 revolutions, by the gear on frame shaft, which is 56; then multiply by the gear on the spindle shaft, which is 55, and divide this by the gear on the end of spindle shaft (56) multiplied by the gear on the end of the spindle (27), thus:

$\frac{268 \times 56 \times 55}{56 \times 27} = 546$ revolutions of spindle per minute.

To find the twist per inch, take the following, alternately, beginning with

the first gear, putting one on the top line and one on the bottom, leaving out the twist gear so as to get a dividend:

27 gear on spindle,
55 " " " shaft,
56 " " end of spindle shaft,
56 " " frame "
45 twist gear,
38 gear on top cone,
78 " " end of top cone,
130 " " " front roller,
3.92 circumference of front roller.

For example:

$$\frac{27\times56\times\ \times\ 78\times3.92}{55\times56\times38\times130}=3.252$$ dividend ÷ 45 twist gear = .73 twist per inch.

By twists per inch is meant the revolutions the spindles will make while the rollers are delivering one inch of sliver.

The Manufacture of Fine Yarns.

HERBERT E. WALMSLEY.

(Concluded from February.)

The mule may have any number of spindles up to 1000, according to the requirements of the trade; I should prefer to have it about 800. The mule consists of about 800 spindles, 1 1-4 inches space, 14 inches spindle, 6 inches out of bolster, 5 1-2 inches bevel, 50 inches stretch, 3 lines of rollers, single loose boss top rollers, self-weighted, middle and back, bottom rollers case hardened; faller shafts working on anti-friction bowls, the under faller being of small diameter and carefully balanced. The mule should have double speeds, after stretch, roller motion, and motion while twisting, faller motion and patent governor motion. All the speeds of spindles, backing off, and running up, are reduced much below the average; thus, instead of backing off and running up in 4 seconds, it is as well to take 5 or 5 1-2 seconds, and no mule will spin these fine numbers unless the lighting up be perfect, *i. e.*, when striking the stops there should be no tendency to rebound; anything of this sort will produce snarls. The under fallers should work freely and be sensitive to the touch of the yarn. The bevel of the spindles will require increasing, and probably the "topping" lowering a little. The number of turns put in the yarn while the carriage is coming out, or the number of turns put in at the head while twisting, vary greatly from one mill to another, more so than any variation in spinning coarse numbers. One rule is to put in 75 turns for each turn of a one-inch roller when coming out, and more or less according to the quality of the cotton, and to gain coming out 6 to 7 inches, and 3 to 4 inches the after stretch. If the cotton is good, the after stretch is increased and the gain diminished, and vice versa.

Another rule for doubling yarns is to put about half the coming out of the other when twisting at double speed, and in this case, with a fair cotton, would gain about 5 inches and stretch about 4 inches after the rollers stop. Some good spinners of these fine numbers will only put about 3 inches gain coming out, and put about one-third of the turns in while coming out, and stretch after the rollers stop 8 inches or 9 inches. The single speed should be about 3000 and the double speed 7000, or even more than this if preferred, but, of course, the backing off and going up must be arranged to correspond, and with rope driving there is no difficulty. Speaking generally of fine numbers, the principle difficulty is one of small details in the matter of cleanliness and smoothness; no doubt, according to climatic conditions, the setting of the rollers may require modification, etc.

A slight variation in the regularity of the roving from yard to yard will make in fine numbers an enormous difference to the numbers of the yarn. Thus, in 300s a difference of 30 hanks is nothing unusual and even a variation of 50 is not remarkable. The difference between a successful and non-successful spinner of these numbers consists in avoiding these large variations. See that the rollers are equally covered as

regards diameter; that the weight of the slivers and roving is frequently checked, and any variation compensated. Furthermore, it is advisable to have the wood bobbins of an exact weight. Then the bobbins should be weighed and classified, so that there shall not be a greater variation than 5 per cent.

The finest numbers usually spun with success on self-actors are 260s; there are mules in France and England regularly spinning these numbers. There is however, really no reason why finer numbers should not be spun; the only question being one of cost, and the question of market. You cannot afford to spin very fine numbers on long mules, as, of course, the production is great on account of the number of spindles, and the market for very fine yarns is limited. When people spin on self-actors they expect to make large cops, and in these fine yarns the cops will be on the spindles for days sometimes, consequently the part that is on longest becomes soiled with the dust in the room, depreciating the value. Of course the small hand mules can spin in small cops, and the mules having a less number of spindles are easily manipulated and changed. Where there is a good demand for 300s, undoubtedly self-actors would crush the competition of the best hand muled yarn.

It may be news to some members of this association to hear that with respect to cleanliness and discipline, also as regards quality of work and high production for spindle, many of the Russian cotton mills rank as high as many of the best mills in England or elsewhere in the world where cotton spinning is carried on. These results are due to the superior intelligence and practical knowledge of the managers and foremen, who are without exception picked men from the best mills in Lancashire, who have been brought up from boys in the mill, steadily rising from the ranks.

The cleaning and oiling of machinery should be attended to at a set time every day. The fly frame and mules should be thoroughly scoured; the former once in three months, the latter at least once a month. A given time should be allowed for this. The weekly cleaning of these machines should also be strictly seen to. The scutchers should be pulled to pieces and cleaned thoroughly once a month, and the dust pipes, etc., swept and emptied once a week. The carding engines should be cleaned in all their parts thoroughly once each week. The combers should be re-set every six months, or whenever the cotton is changed. The help in a fine spinning mill has plenty of spare time between doffing and creeling. Exhaust fans should be used in all card rooms, for by changing the air the atmosphere is kept clear, benefiting the operatives' health.

By drawing the air to one point and discharging it, the dust and fine fly in a card room is so reduced that sweeping is necessary only at long intervals. The result is similar in a mule room. Another important consideration in the management of a fine spinning mill is the waste. The price of the cottons used in fine spinning makes it imperative that every care should be taken in this matter. Waste which cannot be avoided should not be thrown on the floors, nor should it be soiled.

Weaving Calculations.

John T. Taylor is well known as a writer on technical matters concerning textile manipulations. He is now contributing a series of articles on "Calculations in Plain and Fancy Weaving" to one of our most esteemed English exchanges, the Textile Manufacturer, from which we take the following:

In estimating the cost per piece of any woven fabric, the things to be taken into consideration are:

Cost of warp
Cost of weft,
Cost of size,
Weaving wage, and
Expenses.

The term "expenses" includes all wages other than weaving—as, for instance, tacklers' or overlookers' wages, and wages paid for all the processes preparatory to weaving, also the wages of cutlookers, mechanics, sales-men, clerks, and other odd hands; interest on capital sunk in the business; wear and tear of machinery and other plant; rates and taxes; cost of driving power, gas, and other incidental expenses.

The cost of materials and the weaving wage will be much the same in different districts, but the "expenses" will vary according to several circumstances. The item of carriage will, of course, vary according to the distance a mill is situated from the market. The fixed expense of one manufacturer may be greater in proportion to the number of looms than those of another maker; and in cases where a great variety of fabrics are made in the same mill, the expense will be greater in proportion than where only one class of cloth is made. Where colored yarns are used, the cost of dyeing s included in cost of weft.

It is usual to reckon the expen-es in proportion to the weaving wage, or at so much per pick per 1-4 in. In the former case, supposing the expenses to be estimated at three-quarter times weaving, and the weaving wage is 24d., the expenses would be 18d. (24 x 3-4= 18), and the quotation would be said to be based on 1 3-4 weavings. The expenses are usually taken as including cost of sizing, except in special cases. In the second case, if a cloth has 16 picks per 1-4 in., and 2d. per pick is allowed for expenses, those expenses would be 16×2=32d., or 2s. 8d. per piece. Of course the expenses are estimated for a given length of piece in such cases.

Before estimating in detail the expenses incurred in the manufacture of different classes of cloth, we will take an example of the preceding methods.

Example.—Quote on basis of double weaving for the following cotton cloth: Weaving, 2s. 3d.

34 full / 90L.S. 16×14. 32's/50. 7d. 8d. T/W

Taking the above particulars as ordinarily used, the cloth would probably be woven 36in. in the reed from 95yds. of warp in a 60-reed. The cost of warp would therefore be found as follows:

Warp:

$$840\times32=26,880$$

$$\frac{60\text{ reed}\times36\text{in.}\times95\text{yds.}\times7\text{ p'nce}}{26,880}=53.42\text{ pence}$$

And the cost of weft will be, taking the picks as 54 actual picks per inch:

Weft:

840×50=42,000 yds. width,

54 picks×36in.=1944yds. weft in 1 yd.,

and 1944×90 yds.=174,960 yds. weft in piece.

$$\frac{174,960\times8\text{ pence}}{42,000}=33.3\text{ pence.}$$

Total Cost.

Cost of warp	= 53.42	pence.
Cost of weft	= 33.30	"
Weaving	= 27.00	"
Expenses	= 27.00	"
	140.72	"

(or 11s. 8d.: *Answer.*)

The following example will illustrate the method of procedure where the weaving and expenses are given at so much per pick per 1-4 in.:

Example.—Quote for cloth 38in. wide, 75yds. on counter short stick, or 36in. to yard, 72-reed, 80 picks per inch, 24's cotton warp, 28's weft, cost of 28's cotton 6 1-2d. a pound, 28's weft 7d. a pound, weaving 2d. a pick per 1-4in., and expenses 2d. a pick.

This cloth, being 38in. on the counter, would be woven probably 40 in. in the reed, and using a 72 reed we should have:

Warp:

$$840\times24=20,160.$$

72-reed × 40 in. × 79 warp length = 227,520 yds. in piece,

and, $\frac{227,520\times6\frac{1}{2}\text{ pence}}{20,160}=73.3$ pence.

Weft:

$$840\times28=23,520.$$

80 picks×40 in.=3200 yds. in 1 yd.,

and $\frac{3200\times 75 \text{ piece length}\times 7}{23{,}520}=71.42$ [pence.

Total Cost.

Cost of twist	= 73.3	pence.
Cost of weft	= 71.42	"
Weaving	= 40.00	"
Expenses	= 40.00	"
	224.72	

(or 18s. 8¾d.)

In some classes of cotton goods, the actual cost of the size put into the cloth is very considerable, and in a detailed calculation or estimate of the cost per piece, it is necessary to take the cost of size separately. The goods which are most heavily sized in weaving, are the gray shirtings intended for the Eastern markets, and many of these are sized to above 100 per cent, on the weight of the warp. The materials used for this purpose are very varied, including special size compounds, wheat flour, sago, farina, etc.; oils, wax, tallow, etc.; china clay, French chalk, etc.; chlorides of magnesium, zinc, calcium, etc. The materials mostly used for giving weight are china-clay and chloride of magnesium, the latter being a softening material as well as a weighting one. This property of softening the feel of the cloth, it possesses as a consequence of its power of attracting moisture. As a consequence, chloride of zinc is generally used with it to counteract the tendency the cloth would have to mildew, in which chloride of magnesium is used.

Tallow, wax, soap, etc., are the principal softening materials used, their object being to prevent any harsh or gritty feel in the cloth.

Flour, sago, farina, etc., are the adhesive materials used for strengthening the yarn and for carrying the weighting materials through, during the process of weaving.

Wheat flour is better than sago or farina, and for carrying through the process of weaving an extensive quantity of china-clay is therefore most used where heavy sizing is required; but even this does not prevent a certain amount of leakage taking place. The amount of leakage will vary with the percentage of size put on the warp. It will be less in lightly-sized goods than in the heavily-sized. In lightly-sized goods, say 25 per cent. is the calculated amount of solid matter added to the warp, there would probably be not less than 24 per cent. carried through; whilst in heavily-sized goods, say "100 per cent." is the calculated amount of solids added, there would be in many cases a good 7 or 8 per cent. of solids lost in the weaving.

In sizing, the cost of size used per piece, can be arrived at by finding the weight of warp in the piece, and after calculating the weight of the required percentage of size multiply by 1. 4d., the cost per pound of the size put on the warp. The following example will illustrate this:

Example.—What is the cost of size on the warp in a piece having 2400 ends, 50's twist, sized 15 per cent., 100 yds. warp length?

$840\times 50=42{,}000.$

$\frac{2400 \text{ ends}\times 100 \text{ yds.}}{42{,}000}=5.71$ lb. of twist,

and $\frac{5.71\times 15}{100}=15$ per cent. of twist [weight

$0.8565\times 1.4=1.1991$ pence, cost of size.

The cost of size per piece may therefore be said to be 1 1-5 d. per piece. Something should be allowed for loss of a certain amount of the solids during the weaving process, but with this mixing the loss would not be more than 1 per cent., and the cost would be infinitestimal.

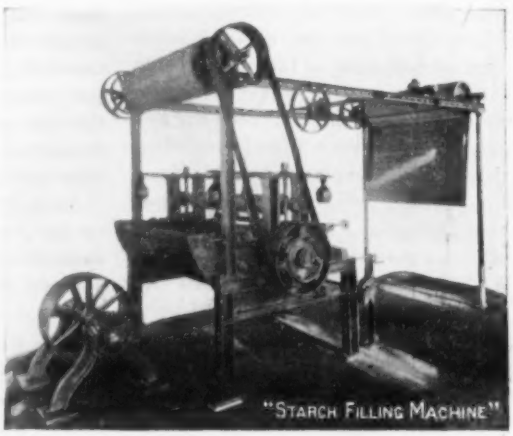
Rules for Yarn Contracts.

The various associations of cotton spinners in and around Manchester, Eng., have adopted a set of rules and forms for yarn contracts, and in connection with these have also adopted a set of regulations in connection with the

Manchester Testing-house. It is not pretended that the latter can in any way fetter the individual freedom of buyers and sellers, who, of course, remain at liberty to mutually arrange the terms and conditions of any transaction in which they engage. All that has been attempted is a methodical formulation of acknowledged customs of the yarn trade, which may be said to have the authority of unwritten laws, and to define clearly other customs which may be admitted to be more or less vague. One of the rules is that in case of dispute as to counts, length, weight or condition the yarn in question shall be tested by the Manchester Testing-house in accordance with the rules of that institution, and that its certificates shall be binding on both parties to the appeal. The rules regarding contracts appear to cover at least all the ordinary possibilities. The schedule of regulations of the testing house includes a list of the fees for different tests, as, for instance, for moisture, length, twist, strength and so on in the case of yarns and counts, strength of warp and weft and percentage of size in the case of cloths. An importer of yarns, in dwelling upon the above, according to one of our English exchanges, favors such an institution that shall also include woolen and worsted yarns. The question as to where the responsibility of the spinner ceases is a difficult one to define, as claims are often brought up that rest solely with the weaver, who tries to shift the responsibility upon the spinner. The establishment of a conditioning house would provide a means for arbitration, and the difficulties arising from time to time would be placed where they belong.

Starch Filling Machine.

We illustrate, herewith, a starch filling machine, manufactured by the Phenix Iron Foundry, Providence, R. I. It requires but few words to express the merits of this machine. Its deeds speak louder than words. It fills the goods with one run, giving excellent results. Should anyone be interested in the machine, one can be seen in process of construction at the works, before shipment. There are two doctor blades; one that crowds the starch into the goods, and the other takes the starch from the roll.



"STARCH FILLING MACHINE"

—New South Wales, Queensland and South Australia have quarantined against South Africa, to prevent the introduction of rinderpest.

—The Pastoralists Review is authority for the statement that the wools of New South Wales generally are not as good in quality as the clip of 1895.

—In portions of South Australia the rabbits have so completely destroyed the herbage that no grasses can be found for the horses of the mail carriers, and camels are being used to cover long distances that are now grassless.

WOOLEN DEPARTMENT.

Finishing Fancy Back Covert Cloths.

As far as the burling of these cloths is concerned, a radical departure from the usual way of doing things is necessary, inasmuch as the fancy back is to be finished just as good as the face. Therefore, extra attention must be given to the burling of the fancy back, so that there may be no chance for claims on account of any shortcomings of this part of the work. All knots should be carefully drawn out, the same as on the face, and then left there for future disposal. The mending also has to be performed just as carefully as on the face. Having all these things attended to, the goods are ready for the fulling mill.

It is not out of place to mention that the finishing room of a mill making any pretensions of being up-to-date, ought to be supplied with a doubling and tacking machine. The work is easier and better performed than can possibly be done by hand, and especially on covert cloths, which sometimes have quite a tendency to rope and roll. The proper tacking is of the utmost importance as a partial remedy for this evil. The soap to be used on these goods requires special attention, and should be of the good quality and good body, with the alkali reduced to the safe limit, so as to retain all the brightness of the colors, especially those which are used in the back. They should run in the mill from 3 1-2 to 4 1-2 hours, and the body of the soap needs to be heavy enough to last through this, and retain vitality enough to do for the washing also, without adding more. In providing for the ultimate weight of the goods by shrinkage, the fact must be borne in mind that the back will receive as much work as the face, and therefore the shrinkage due to this must receive consideration, so as to have the goods come out up to weight, and of good strength, which is apt to be lacking if this matter is lost sight of.

Having determined the amount of shrinkage, and the soap properly made, the goods are now left to the fulling process. Here it should also be noted that on fancy backs it is preferable to run them slightly on the wet side, that is, just enough to reduce the friction and waste always due to fulling to the lowest limits. Careful watching is necessary so as not to let the goods roll too much; if the tendency is that way, and if there is any sign that they will roll more than they ought, they should be taken out, well shaken, and put in again, the other end first, adding a little more soap. This will usually help the matter. After fulling they are taken to the washer, but first the tacking is taken out, which if done by machinery, will come out very easily. It is also a good plan to pull the goods over a perch to see if they are sound in every respect before they enter the washer. This precaution although seldom mentioned, is, nevertheless, one of the important little items in finishing, for in this way any damage done in the fulling mill will be detected at once and can then be stopped without spoiling five or six pieces which is sure to be the case if goods are not perched here.

Plenty of warm water is one of the necessary items for good work in the washer, but that is not saying that the work cannot be performed without it. Warm water is apt to remove the soap quicker, and if to this is added about a quart of ammonia for each piece, the brilliancy of the colors will be improved. When thoroughly cleansed

they are taken to the rolling machine and tightly rolled up, being careful to have the place where the rolls are to be laid clean also, that nothing may mar the back. Next morning they are unrolled and at once taken to the napping machine. The face should get one run, then go to the cropping shear to be nicely and evenly cropped, after which the goods are returned to the napper to receive the final treatment. Two runs on each side are now given and then pass the pieces to the wet gig or brush gig, and give both sides four runs with plenty of water, and again roll up tight and stand on end over night. Next morning they are carefully unrolled and placed in the extractor and thoroughly extracted. They are then taken to the brush and both sides receive a good brushing, when they are ready for the dryer where they are dried, back up. In the drying of fancy backs the utmost care is to be observed to have the goods run into the dryer properly so as to have the patterns, which are usually plaids, come out nice and even. Nothing looks worse than to have such patterns crooked, bellied in the centre, or one side ahead of the other. While these are objectionable features on any kind of goods, it becomes at once more noticeable on these.

After the goods are dry they should again be carefully burled on both sides, that no knots may be left on either side to hurt them in the shearing process.

A good steam brushing is now in order, which will loosen all the fibres so that the raising brush can get hold of them, which, of course, the back should get as much of as the face. When the goods are sheared low enough they should receive as many runs as time will allow for. It will not do to stint them here. Another steam brushing will fit them for the press where they should be pressed hard with the face to the bed, and the face should get a steam brushing to remove all glaze which on the back is not necesssary. Careful handling throughout the final processes is more necessary than on any other kind of goods, on occount of the finished back, as any carelessness is apt to show itself at once and unpleasantly.

Chalk Talk.

FINISHING ROOM CALCULATIONS.

II.

Having previously considered the calculations necessary for the shrinkage of goods in order to obtain the weight desired, and also those relating to the amount of flocks to be applied providing the goods do not shrink nor stretch, we will now turn our attention to a different condition, taking for example, those goods where it is desirable to have some shrinkage, in fact, where it is absolutely necessary to have it to obtain the finish, and where it is still desirable that flocks should be added to the goods. Two ways are open on this class of goods, that is, either a certain amount of flocks can be put on each piece and the weight regulated by shrinkage, or shrink each piece a certain amount and regulate the finished weight by the amount of flocks put on the goods. In experience this latter method will be found to give by all odds the best satisfaction, but there is room for an honest difference of opinion upon this point. Let us therefore consider the first named method and after that, the other. For instance, a piece of cloth comes from the weave room weighing 22 ounces, which will lose 20 per cent. in the operation of finishing and is to weigh 24 ounces when finished. First find the clean weight as illustrated in previous issue, which is 17.6 ounces. Then add to this the amount it is desired to make up with flocks, bearing in mind, however, to take double the quantity that it is desired to add for additional weight. For example, we wish to make up 4 ounces in flocks which would give 21.6 ounces as the weight of the goods with the

Example #1.

22 oz = wt from loom
20 % = loss in finishing
24 oz = wt per yd wanted
36 in = 1 yard
4 oz = wt to be made up by flocks.

22 x .20 = 4.4 oz loss
22 − 4.4 = 17.6 clean wt
17.6 + 4 = wt with flocks.
4 oz x 2 = 8 oz amt flocks required

$\frac{21.6 \times 36}{24}$ = 32.4 ins length of yard after shrinking or 36 − 32.4 = 3.6 ins to be shrunk

Rule: Find clean weight and ounces to be made up - Multiply this by 36 and divide by weight wanted. Subtract result from 36 gives inches to be shrunk per yd

Example #2

22 oz = wt per yd from loom
20 % = loss in finishing
24 oz = wt per yd wanted
36 in = 1 yard
3 in = amount to be shrunk

22 x .20 = 4.4 oz loss.
22 − 4.4 = 17.6 clean wt
36 in − 3 in = 33 in a yd after shrinking

$\div \frac{36 \times 17.6}{33} = \frac{2112}{11} \div = 19\frac{2}{11}$ oz wt per yard after shrinking
24 − 19.2 = 4.8 oz difference to be made up by flocks 4.8 x 2 = 9.6 oz Amt flocks required.

Rule: Find clean weight and multiply by 36 less the amount to be shrunk. Subtract result from weight wanted and double this is the amount of flocks required.

Example #3

20 oz = wt from loom
15 % = loss
20 oz = wt per yd wanted
36 in = 1 yard
3 in = stretch per yd

20 x .15 = 3 oz loss
20 − 3 = 17 oz clean wt per yd
36 + 3 = 39 in yd after stretching
$\div \frac{36 \times 17}{39} = \frac{204}{13}$ = 15.7 oz wt per yd after being stretched
20 − 15.7 = 4.3 oz difference to be made up by flocks,
4.3 x 2 = 8.6 amount of flocks required per yd.

Rule: Find clean wt and multiply by 36 and divide this by 36 plus the amount of stretch per yard. Subtract result from wt wanted and double this is amt flocks required.

flocks, leaving 2.4 ounces to make up by shrinkage. We proceed to figure as before, thus:

$$\frac{21.6\times 36}{24}=32.4$$

So a yard should be shrunk to 32.4 inches which would give $36-32.4=3.6$ inches for yard to shrink.

Taking the same example in the second method described above, that is, to shrink the goods a certain amount and make weight with flocks, proceed as follows: Wishing to shrink the goods 3 inches for yard, after finding the clean weight which is 17.6 ounces for yard, shrink the goods 3 inches and then see what a yard would weigh. Thus, if 33 inches weigh 17.6, how much will 36 inches weigh? set down in this manner:

$$\frac{17.6\times 36}{33}=19.2 \text{ ounces per yard.}$$

Taking 19.2 from the weight wanted which is 24 ounces, leaves 4.8 ounces per yard to make up in flocks which will require 9.6 ounces to accomplish.

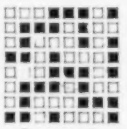
Another class of goods which cannot be shrunk, but, which, owing to their construction, must be stretched a certain amount to give good results; the only way to make weight on these is by means of flocks. For an illustration of this class, take a piece of cloth coming from the weave room weighing 20 ounces, the loss due to finishing is estimated as 15 per cent., and the stretch 3 inches per yard, finished weight wanted is 29 ounces. Always find the clean weight first; this is 17 ounces. Now comes in the stretch so that if 39 inches weigh 17 ounces, find out how much 36 inches will weigh or just the reverse of the other example. Therefore, multiply 36×17 and divide by 39 which gives 15.7 ounces as the weight per yard. Subtract this from the weight wanted, would give 4.3 ounces to make up with flocks requiring 8.6 ounces to produce the result wanted.

All these calculations are simple in the extreme and can be easily mastered by any one having a knowledge of the rule of three, but it should always be borne in mind that all calculations should be based upon the clean weight of the goods in order to give reliable results.

Woolen Fabrics with the Beaver Finish.

Robert Beaumont, in the Textile Recorder, says that attempts are being made to revive this kind of soft finish in fancy woolen fabrics of a trousering description.

It possesses qualities which very markedly distinguish it from the finish commonly applied to cheviot and similar makes of cloths. All goods, which are intended to be finished on this principle, require to be well felted, which necessitates the piece being set in the loom, on an average, from 72 inches to 78 inches wide, according to the stoutness of texture required, and the amount of raising to which it has to be subjected.

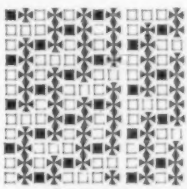


DESIGN 1.

They are specially adapted, on account of their thickness and warmth in the wear, for winter garments. The peculiarity about the finish is the pile or fibre which is spread over the face of the cloth. This is got first by shrinking the piece until the threads are firmly matted together, giving solidity of texture, when it is severely raised by passing round the raising gig. To produce a soft and dense pile, and to prevent the fibre being removed from the foundation of the piece in raising, the cloths are, previous to this operation, well damped. One result of getting the pile or fibre out of the bottom of the cloth is that the colors in the pattern, as well as the weave, are effectively subdued, and appear more or less, according to the severity of the raising, to shade into each other.

Some of the weaves which are being

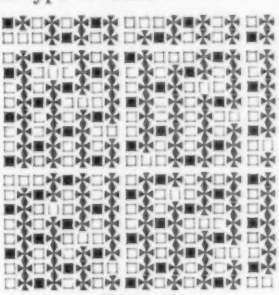
used for these fabrics are illustrated in designs 1 and 2 and 3. The first is the ordinary double plain weave, striped in order to stitch the two fabrics together.



DESIGN 2.

It is, perhaps, the commonest weave employed in making beaver fabrics; the main object in view being the construction of a well-built cloth and one which will felt readily, and be firm and sound in the hand. The piece should be set 74 inches wide in the loom for 58 inch finished, and be shrunk 20 per cent. in length.

Designs 2 and 3 have both a prunelle twill face, but the former has a 6-end sateen back, and the latter a 9-end sateen. They are both useful weaves for this type of finish.



DESIGN 3.

Kerseys and Twill.

The sale of the kersey fabric is limited to a large extent, and the conditions which have brought this state of affairs about, have been due in a great measure to the makers of kerseys themselves. As soon as any fabric becomes popular, it is made by almost every woolen manufacturer in the country, and the trade, generally, loses interest in it, for with the large number of makers, all producing the same fabric, the competition becomes extremely hard; and clothing is sold so cheap at present, that in staple lines of goods, such as kersey overcoatings, the item of a few cents a yard cuts considerable of a figure.

This sharp competition at the present time has thrown the kersey fabric out of favor, with the more progressive clothing makers, and the effort is now to find some fabric which will be sufficiently novel to take the public fancy. The man who makes novelties is the one who is most likely to make the most money, for in the line of novel effects, competition is not so sharp. The fabric which has come into favor for coatings is the melton twill.

It is a wide wale twill, finished with a melton finish, and made in various shades of mixes, the browns and olives being the chief mixes used. This fabric for overcoatings should weigh 29 ounces and in an all-wool fabric, and should not cost more than $1.12 1-2.

This same style of fabric is in demand for suitings, and in these the weight should be 21 ounces and the price $1. While the kersey business is practically dead, it is undoubtedly true that later in the season the buyers will have to buy quantities of this fabric to fill in, but in another season some new fabric will hold the sway.

Rug-making for Convicts.

Among the latest plans suggested for the employment of convicts, is that of John Murray Mitchell, who, as a member of the Executive Committee of the Prison Association, New York, has given the matter much attention. Mr. Mitchell says that the prisoners in the State prisons should be allowed to make Turkish rugs; and in advocating the scheme says: "This industry requires an immense amount of time, which is one thing that the prisoners certainly have to give; that is, if they have long sentences, and it would not conflict with any outside labor."

It is thought that instructors could be

found among the Armenians who have sought refuge here, and who are masters of the rug-weaving industry. The people who favor the movement believe that a sufficient number of expert teachers could be found, and that the work would be remunerative after a short time. The plan was tried in India, but was abandoned there because it conflicted with one of the great industries of that country.

As the methods in this country are so much ahead of those of India, we have no manufacturers of rugs of the character that would be produced in the prison, and the industry would therefore not be a competitor in any way with outside and honest labor.

The warden of Sing Sing Prison, N. Y., thinks the plan feasible and hopes that steps will be taken to give it a trial. The plan seems to be a good one, and worthy of consideration because it is the only one proposing inside work to which the American laborer cannot object.

How Ribbed Cloth is Constructed.

The process of forming the characteristic rib effects which are so valuable in the making of certain kinds of pant goods and kindred cloths, is explained in connection with the views. The first one of which presents a sectional outline of a piece of ribbed goods,

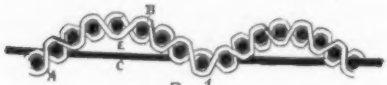


Fig 1.

showing the ridges which produce the rib. The ribs are practically nothing more than elevated sections of two-ply cloth, but the weaving is of such construction that the texture is not as thick nor as heavy as would be expected in a double weave. The only time when the cloth is double is when the ribs are thrown up. The elevation is high enough to permit the end of a knife blade to be inserted without cutting the threads of either top or lower systems.

Rib goods are woven on fancy looms in which some eight or ten harnesses and perhaps two or more shuttles can be used readily. One system of the warp consists of threads which run along on a common level, after the plan of the thread *C* shown in Fig. 1.

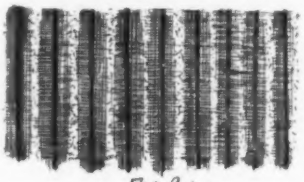


Fig 2

Another system forms the ribs *B*, the extension beginning at *A*. The space between the two systems is marked *E*. The effect on the surface of the goods is illustrated in Fig. 2. Of course many different effects are produced by introducing variously colored yarns and different types of weave combinations, but they all tend to the end exhibited in the plan shown in Fig. 1.

There are double ribs and even three-ply ribs all of them being formed according to the one principle. Although used mostly in the making of cloth for pants, ribs are seen in varied styles of woven texture. In the knit goods line, being one of tne most prominent kinds of texture.

Yarn Counts.

A MUDDLE—A SUGGESTED IMPROVEMENT FOR UNIFORMITY.

The confusion that is occasioned by the use of various standards for calculating the counts of yarn made from different materials, afflicts the American textile manufacturer quite as much as the foreign one, and if there is any way by which a general agreement can be arrived at for the establishment of an uniform standard, it would be greatly welcomed in the United States as well as abroad. Apropos to this we have the

satisfaction of producing in these columns an abstract of a paper recently read before the Bradford Textile Society, Bradford, England, by M. Blair, of Glasgow, Scotland, who, as a merchant and buyer of yarns, has given the subject a considerable amount of attention. Mr. Blair said as follows:

The study of this subject has led me to realize forcibly the extraordinary muddle that our yarn counts are in, and the great need there was for some intelligible system to which they could all be reduced—some universal language, some perfect system, founded on a definite principle, that should in time supersede these confused counts, and greatly facilitate our calculations. Reforms of this character, however desirable, nevertheless make very slow progress. Opinion has to be educated. We have in arithmatic, rising by tens, hundreds and thousands, a system of calculation the most perfect that the world has seen. No instrument could be better contrived to do its work with speed and certainly in the advancement of the human race.

But when we come to use this beautiful and perfect instrument in our commerce and manufactures we create barriers to its usefulness of the most antiquated and absurd character. Neither our weights, our measures, nor our money are arranged so as to take the fullest advantage of our admirable system of arithmetic. We hinder and confuse every calculation by employing units and divisions that are wholly arbitrary, most laborious to learn, and most intricate to calculate. The anomalies of our weights and measures are confusing and even ludicrous. Why, for instance, when we measure along the ground, do we talk of inches, feet, yards, poles, chains, furlongs, and miles, and divide by 12, 3, 5 1-2, 4, 10 and 8? When we measure downwards we count by fathoms of 6 feet, but never so when we measure upwards. If we buy gold we count by 12 ounces to the pound, but if we buy lead we count by 16 ounces. Why should a stone be 12 pounds in some parts of the country, 14 in others, 24 in others, and 28 in others? Why should a hundredweight be 112 pounds, and why should 100 herrings be 120? These are things that "no fellow can understand." If we would apply the same decimal system, that is, counting by tens, which we use in arithmetic, to all our weights, measures and money, we would economize human brain and effort to an enormous extent.

Of all the muddles and confusions of our non-decimal system, perhaps that of Yarn Counts is the very worst. If you study them, you wonder how we, the largest manufacturing nation in the world, have been able to get along at all. The amount of useless calculation is extraordinary. It is clear that all the methods of count in use have been created by spinners, exclusively for their own convenience, and with hardly any consideration for the wants of the manufacturer. Hence has arisen this confused mass of systems of reckoning counts, and as a proof that they have in general been created by the workmen for the own use, it is to be observed that none of them are "decimal," and not one of them can be conveniently used except for yarn of a thickness somewhat near to the particular kind which the spinner who invented the count was usually spinning. The Yorkshire woolen spinner, for instance, uses the "skein" system. He has a little reel by his spinning frame, on which he winds a small quantity from time to time, as the spinning goes on, and finds how many yards weigh one dram. This is very easy for him, and is a type of the way in which all our counts have been created. No considaration was given to simplify the manufacturers' calculations as against other yarns. The spinner simply reeled a bit, large or small, just as suited himself, and from that made his count. Hence we have skeins of all imaginable lengths, and reels of all circumferences. The

worsted spinner makes a skein of 560 rounds, on a 36-inch reel, and bases his count on that. The cotton spinner uses the same number of rounds, but on a reel of 54 inches. The linen spinner makes 120 rounds on a reel of 90 inches. The silk throwster makes a skein of 500 yards if it is Tussah silk, but if it is Chinese silk he makes skeins of 1000 to 1500, and 2000 yards, and counts are made up based on each one of these systems. The Italian throwster reels in all sorts of ways up to 10,000 yards in a hank, but makes up his count on none of them; he makes test skeins of 400 French ells (now an obsolete measure), and weighs it by deniers—also a weight no longer in use. And yet all Europe deals in thrown silk in this antiquated system—a system that has no regard whatever for the convenience of the manufacturer. In the sewing-machine silk trade of Leek the skeins are of all imaginable lengths: 260, 266, 273, 288, 300, and 500 yards are common, and they are weighed by so many drams to the skein. In some districts in Scotland the skein is 240, in others 300 yards, and it is weighed by the "stone." But the stone is of no uniform weight; it evidently arose from a stone set aside by the unanimous consent of the villagers to be their standard of weight. Hence we have stones of 12, 14, 24 and 28 pounds in use in various districts of the country.

Nor are things any better on the Continent. Although 1000 metres to the kilo. is the rule in many parts of France, Roubaix counts by 700 metres, Amiens by 710 metres, and Rheims by 1000 metres for carded yarns, but always one-third less for combed yarns. Sewing silks are counted by the grammes in skeins of 234 metres, while in the tram and organzine trades the "metric" system has never been adopted at all. In America the skeins range from 50 to 1600 yards, and are calculated by the pounds.

The systems in fact are endless. They were all created for the spinners' convenience, with no regard whatever for the manufacturer. Not one of them is based on any uniform or sound principle applicable to all thicknesses of thread. They are all bad, root and branch. The calculations of manufacturers are in no way aided by these complicated counts. Where goods are made from one material only, the case is not so very bad, although needlessly intricate; but where several different classes of yarns are used in the same cloth, the labor to the manufacturer is greatly increased. In some tapestry fabrics as many as seven different classes of yarns are used, all calculated on different scales; thus:

Cotton	840 yards scale
Wool	560 " "
Spun silk	840 " "
	(but different from cotton)
Organzine silk	Denier scale
Tram silk	Drams scale
Tussah silk	500 yards scale
Linen	Belfast scale

To calculate the lengths, weights, and value of the quantities of the foregoing in a piece of cloth is a serious task, open to many errors, and it adds sensibly to the cost of production. It might all be simplified by a rational and uniform system of counts.

Here, then, the question naturally arises—What is "Count"? What are its uses? And what idea does a spinner or manufacturer intend to express by count?

Count is the relationship of length to weight. In all cases it means a certain length of thread in a certain weight. It does not show the actual thickness of a thread: that is the province of "Gauge." Rigid substances, like wire, are distinguished by gauge, which is the size of a hole through which the wire will run. But elastic materials, like wool and cotton, are not adapted to be distinguisbed from each other by means of "gauge"; for them count is necessary.

Count being made up from the two factors of length and weight, it follows that if we change one factor we change the count, although we may not change

the yarn. If, for instance, a woolen yarn in the ordinary oily state measures 1,000 yards to the pound, but when scoured that length weighs only 12 ounces, it is evident that we have altered one of the factors of count. The substance remaines the same, but the count is different. It requires now 1,333 yards to weight 1 pound. On the other hand, if we dye it 20 oz. dye, as we can do with silks, we likewise change one of the factors, and therefore change the count. In place of 1,000 yards to 1 pound, it will now take only 800 yards to weigh that amount.

The use of count to the manufacturer is to let him see the length of thread he will get for his money. He requires this to enable him to calculate his warp and his weft quantities; but he also requires to know the weight of cloth that will be produced. He may buy yarns by length or by weight, but in either case he will require to know the length as well as the weight. Hence count is the relationship of length to weight.

(To be continued.)

The New York Wool Exchange.

A meeting of members of the wool trade of New York and other cities was held last month in the rooms of the New York Wool Exchange, to consider plans for putting the Exchange into actual operation. The local trade was well represented, this, in fact, being the first time that its members had come together to consider means for improving the wool business here.

The President of the Wool Exchange outlined the advantages and purposes of the organization, and stated that subscriptions to the capital stock of the Exchange of $1,000,000 had already been received to the extent of $700,000. The Exchange now owned the building and its facilities were therefore permanent. He emphasized the necessity of a classification for wool. "We must," said he, "establish standards of grade for the different classes of wool. Taking a large quantity of wool grown in any one section, lot after lot can be handled and baled on a uniform standard as far as grade is concerned, which successfully defies criticism. Other markets will recognize our standards; all papers everywhere, at home and abroad, will quote on them, and will discredit inferior methods. Instruct your Committee on Transportation to secure lower freight rates and rapid delivery. You ask why the rates on wool are exorbitantly high and delivery systems so indifferent. Why is wool discriminated against on all transportation lines? Railroad and steamship lines do not know that we as a trade exist. They know that our wools yield them annually an enormous tonnage, but as we have no requirement, make no demands and accept silently very indifferent service, we have to them no real existence. We have decided against the proposed plan for a Committee on Credits as being impracticable. In regard to the building, the trading floor, to which none but members will be admitted, will be equipped with every needed facility. The bulletins will contain news items of every nature useful to the members. Foreign markets will be regularly reported as well as the receipts of wool at various points. Tables for showing samples will be furnished, also cases for exhibits of standards."

The Wool Exchange is both a corporate and a trading body. The corporate body own the building, rent offices and want to make money. They do not purpose to do business in wool, but they intend to send agents to the various wool sections of this country and the leading European wool centres to solicit consignments of wool. The Wool Warehouse Company will not sell wool, but will store it, sales being made through brokers.

KNITTING DEPARTMENT.

The Knit Goods Situation.

Things have started. Not the ones which it was most wished would start, it is true, but the momentum of one line influences another and the trade consequently feels much gratified. General testimony goes to show that the motion was first discernable from two to three weeks ago, and in low priced goods there has been steady, and, in some instances, rapid increase in demand. In one way, this improvement is very encouraging, for the call had held off so long, few expected to see any change for the better, until a special session of Congress had been called. Mighty little money is being made on the low priced stuff that is now being bundled out, but it is no longer necessary to squint by a telegraph pole to see anything move, and that fact alone is sufficient to put pluck into the hearts of universally fagged out tradesmen. In calling upon ten of the largest concerns in the trade, last week, I found not an exception to this rule of improvement, although two or three had not experienced much from it individually. As for three months past, everybody is looking forward to a year that will average well, in spite of the exceptionally dull early weeks. One of the most conservative underwear men on this terrestrial ball, who a month ago was inclined to say mighty little when I called upon him, voluntarily told me the other day, that it would n't take much to give prices a boost. This, although nobody in the trade has yet had the courage to even whisper about an advance. The great fight in underwear is over low priced fleeced goods, which are being offered from 15 to 25 per cent. below last year's quotations. There are a few exceptions to the general call for low priced goods. One of the largest local houses says, its business on full-fashioned goods is fully 50 per cent. larger than at this time a year ago. In fine balbriggans, too, several houses report satisfactory activity. From the Pacific slope the last few weeks has come more call for higher priced goods. Hosiery, as might be expected, is not moving as well as underwear, although some manufacturers could be named who are behind their orders on certain novelties and a few especially popular staples. Plaids are being largely called for and shown and the indication is they will grow in favor for many months to come. The stripes in the knit good mills complicate the situation. The general opinion seems to be that a cut in wages is indispensable to the starting of the industry at present values. Then, as the demand creeps up, advances will be made. The trade for the most part is as cautious as ever—over cautious would express it better. Still it is hard to convince the retailer and jobber who points to carried over stock on his shelves that he could replace for less money, that there can be in any event such a thing as over caution. Orders continue from hand to mouth with a "raft" of stuff picked out "subject to confirmation," three words that never disgusted the trade as they do to-day. The increased activity in most special lines of goods has not yet risen high enough to bring the volume of sales up to that of the corresponding time a year ago. The trade, almost to a man, expects to see a decided stiffening in wool within a month, but the more sagacious remember that the advance in manufactured products never keeps pace with that in raw materials. To sum up

things—all are looking forward to the dawn of a brighter day, being obliged just now to do business, not for profit, but for the fnn of it, many in the hope that by so doing they will soon push out their weaker kneed competitors.

Designing in Hosiery Manufacture.

JAMES H. QUILTER.

Continued from February.

A special department of our trade in which designing is an important feature is that of the manufacture of fancy socks, one-half hose and hose on the improved hand frames and rotaries by the aid of an additional machine known as the "bottom machine" or "check machine." The particular class of design in this case consists of fancy horizontal stripe work, perpendicular stripe work, designs in squares, zig-zags as a whole or in conjunction with horizontal stripes, concluding with the more advanced system of diamonds in solid or mixture colors.

Fancy Horizontal Stripe Work. In this department are included ordinary and fancy stripes. In the former many patterns are produced by the use of several ordinary carriers, each being so constructed as to lay its thread at any desired course, one for any number of courses, so that by a proper combination of colored threads, many patterns in stripe work can be made, one color being used as a ground work and others for producing set designs in stripes at certain intervals apart, varying from one-quarter of an inch to some two inches in width. These may be considered as designs in their simplest form, but a striking variation is made in this class of work by the addition of tuck pressers, thus making the striped designs in broken colors under principles already explained by the manipulation of two, three or more of such pressers.

Perpendicular Stripe Work. It is for this and subsequent designs that the bottom machine is used. But, before dealing with the design itself it will be

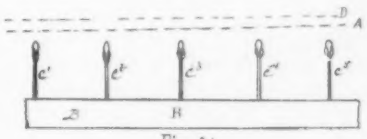


Fig 21

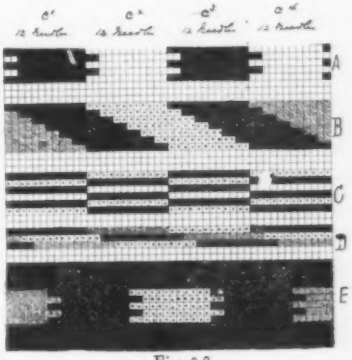


Fig 22

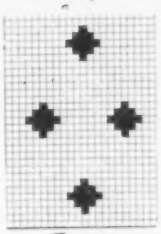


Fig 23

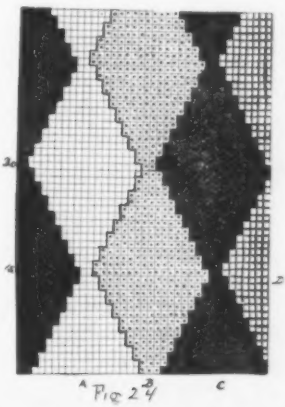


Fig 24

necessory to show the principal of this machine and its mode of working. Extending across the face of the frame

below the level of the needles is a machine supported at each side upon arms attached to the side of the frame, and having a backward and forward movement on these arms equal to that of the frame during the formation of a row of new stitches. A part of the machine consists of a guide bar having a sideway motion along the machine, such motion being equal to a given number of needles. On this part, at intervals, are fixed thread layers at a distance apart equal to the sideway motion of the bar. Both, of course, being variable for the production of different width of stripes. Let us take as example a 12-needle stripe. Fig. 21 shows sketch of the arrangement of thread layers. A being a line of needles, B the guide bar and C the thread layers and D the line of the ordinary carrier which lays the thread across the whole of the needles for ordinary knitting. The thread layers C^1, C^2, C^3, C^4, C^5, etc., have by a movement of the machine an upward motion through the needles and to the right of 12 needles, while above the needles, and back, below the needles, to original position at one course; so each guide supplies its thread to 12 needles only, before laying the thread for next course. The guides have a two-needle movement while below the needles, and then in this position move through and over 12 needles to the left for next course. By following the various movements shown at Fig. 22, an idea of the number of designs can be produced by such a machine. First, each guide may and does for purposes of design have special colored threads. At A, Fig. 22, where an ordinary "horizontal stripe" is being made, the two colors are shown in black and white, but each guide may have any number of colors or one for each 12 needles. This being resorted to in the case of making theatrical hose or underwear, and for special color for football or other sporting hose, jerseys, etc., etc. It will be noted that the movement of the thread layers under the needles makes a journey of the two colors over 2 needles, whereas, if each guide was working over 12 needles, only strips of web, 12 needles wide, would be made unless some special arrangement is made for overlapping of threads. Special patents are doing this for special makes of hose, etc., as "Magpie feet," etc. At B, Fig. 22, it will be seen the design is a Vandyke by a special movement of the guides sideways, 2 needles in the same direction, under the needles, and then 12 needles over to the right again; or, this can be varied in many different ways by making small zigzags, say, for 3 movements to right and for next 3 courses to left, or 6 and 6 zigzags; continuing this for the whole length of the design, or making it as stripe work by stopping "bottom machine" for a number of courses and laying a stripe at these courses by the ordinary thread carrier D, Fig. 21. At B, Fig. 22, it will be noted that each alternate guide is shown to have a different thread, thus showing three colors. This, of course, lends itself to many arrangements of colors in stripe work, say, for example, 12 course plain, with ordinary carrier D, Fig. 21, and 12 course with bottom machine varying its movement each course, as shown at C, Fig. 22, or zigzag as B, Fig. 22, or again as at D; while a further development of design is shown at E, where the ground work, as laid by thread carrier D is same as alternate guides in machine B, thus producing squares of various colors on a ground work.

Now understanding this system, it will be seen that if carrier D is always at work, that machine B may have its guide, C^1 C^2, etc., so arranged at stated intervals in irregular manner, and simply lay its threads over any particular one, two or more needles, to produce plaited spots, or other designs on the face of an ordinary knitted fabric, the threads lying loosely at back of fabric from one spot or design to another. This is shown at Fig. 23.

Fig. 24 shows a diamond pattern pro-

duced by diamond machine, a further development of bottom check machine. This machine has two or more bars upon which the guide C^1 C^2, etc., can be fixed, so that, according to the bar they are on, their movement shall be distinct from each other. We will show the system of one movement for pattern, as shown at Fig. 24, where a number of diamonds are shown in various colors. Let A B C represent three colors, and if each course is taken individually and examined it will be seen that, commencing at course No. 1 to 15, that thread A has been laid upon less needles each course, and thread B upon more. Therefore, these guides must have a different motion. Thus, if two bars are used, A and C, etc., would have their threads drawn on thread layers of one bar, and those of B and D of the other bars. The movement of each guide bar is the same, but in reverse. As B increases its width of traverse, A is decreasing for the first 15 courses, when a change is made, and B decreases, and A increases. The increase of needle travelled by each guide is one-half, having a corresponding decrease in the second half of the diamond. To follow the motions of the thread layers: The bar laying thread B first lays over 3 needles from right to left at course one, then at next course over 4 to the right, or one extra needle. At course 3, over 5 to left, and course 4, 6 to right, so that no movement is made under the needles. While this has been going on, the thread layer having thread A has laid 16 from right to left, and moving in one at the next course, while under the needle lays over 15 needles from right to left at course two. This process being continued, according to the arrangement of colors, different plaids are so formed, and the once popular tartan hosiery was all produced by such a machine as explained.

A further use of the bottom machine is in connection with the glove trade, in the making of white Berlin woolen gloves and Ringwoods. Numerous designs are worked in the back of the hand, such as zigzag stripes, to imitate the usual cording that gloves have along the back of the hand between the fingers.

How to Count Gauges on Knitting Machines.

Editor Textile World:

Will you inform us of the relation between the gauge on a knitting machine as counted and as it appears upon the fabric when knitted. What we want is the authority of the TEXTILE WORLD to a statement of the proper method of counting gauges, taking English flat machines, Cotton's patent, as the basis; also how to certify the same gauges in the fabric.

Pa., February, '97. O. O.

[As the question of our correspondent is an extremely interesting one and something that should be settled as authoratively as possible, we have obtained the opinion of "Old Superintendent," who is recognized among our readers as one of the best authorities on questions of this kind. We append his answer, as follows:

"In reply will say from the date of the first patent issued July 31, 1815 to A. Porter, J. Mead and J. Steedwall, of Queensburg, Warren Co., N. Y., up to date, 1897, the manner of counting gauges, to me, is not a correct or satisfactory one, for nearly every maker of machines and many knitters have their own method of calculating the same, and for any one man to say he knows or understands the same it would be presumptious. Since the trade is not agreed on a correct method, I wish to make a suggestion that a standard may be now established, and I will give my theory of arriving at such, hoping to hear from many others on a subject of so great importance. First, in England and Scotland, the lead gauges are universally used as a standard, but that is not a correct method, as I will clearly show, for it is nearly impossible for dif-

ferent makers of moulds to make them exactly alike, as the least variation in size will make a difference of a number of needles on a frame, either flat or circular. The proper way to do is to count the leads or needles in the frame. On circular frames reduce the diameter to a straight line, taking from centre to centre outside of needles. Then divide the number of needles by the number of inches, as the gauge on knitting machines bears the same direct relation to the number of needles per inch as the dents in a reed to the warp in a loom, and the less intermediate calculations the simpler and better a standard will be. Some manufacturers take a small unit of two and three inches counting the leads as a standard, but of late this has been disapproved of by the more scientific makers and knitters in this country, as in machines that are made with groves or tricks the gauges can be had more accurately. It is often the habit when a mould is not exact, to put in slips of paper here and there, and leads are sometimes rubbed with a file.

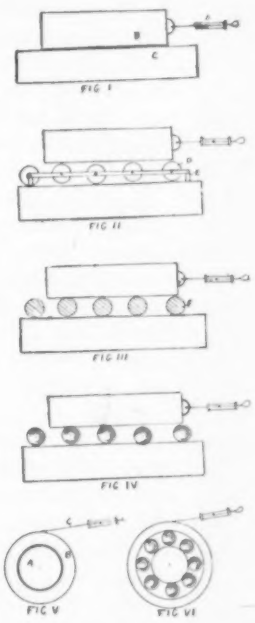
In measuring circular frames, of any kind always measure from the point of needle where the stitch is formed; and to obtain the diameter, measure from back to back of the needles, as that is where the cloth hangs and the stitch formed. At Cohoes, one of the centres of knit underwear, in the machines in use there the needles are cast in moulds, 2 needles in a lead, and the gauge in them are known by the leads in 3 inches. For instance, say 24 gauge, 16 needles to the inch, wire gauge stubs, No. 22 1-2 wire; while the trick needle machines that are used in Philadelphia for hosiery and jersey cloth, the gauge is known by the number of needles in 2 inches. For instance, take 24 gauge as in the above, number of needles, 12 to the inch, and number of wire 20, showing a difference of 4 needles to the inch, and difference in wire of 2 1-2 numbers. With full fashioned underwear, the gauge is known by the same rule as the Cohoes standard (24 gauge, 16 needles to the inch), the needles however are made from heavier wire, No. 20 instead of 22 1-2.

The question of how to certify the same gauge in the fabric, is rather difficult task to answer, for the fabric can be made to appear from 2 to 4 gauges finer or coarser by using lighter or heavier yarn, short or long stitch. And another important element is in the yarn, whether it is soft or hard twisted. Competent knitters however will have the gauges as near correct as possible by measuring a certain length of yarn, say one foot, and count the amount of stitches it forms; then, if right, make each and every stitch alike on all the frames, on the same line of goods, and have the yarn spun accordingly. By following the above rule a standard may be adopted. The above is what I have practiced for years when I have been employed as superintendent in starting new mills, and always instructed overseers to follow out my instructions, and I could always get regular and uniform goods.

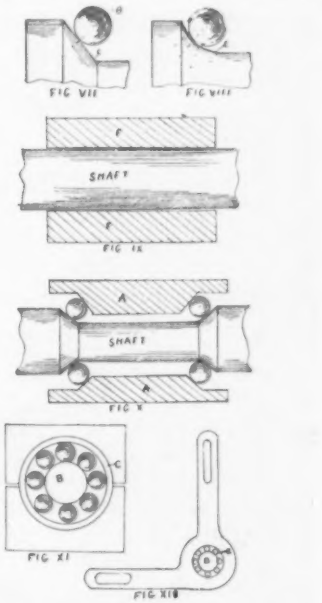
Ball Bearings in Knitting Machines.

Ball bearings are getting quite popular for most every kind of machinery. That a saving of power and reduction of friction are obtained by the use of ball bearings are of course accepted facts among all builders of machinery. It is only in recent times, however, that ball bearings have been experimented with very greatly in the line of textile machinery. There are not very many frictional bearings in the average knitting machine, but what there are can be made to run with less power by substituting balls for plain surfaces. In order to procure some facts regarding the advantages of introducing ball bearings in knitting machinery, a series of tests were followed, consisting first of ascertaining the amount of friction generated by two metal surfaces in contact as shown in Fig. I. The body *C* was stationary and *B* loose. A delicate scale was arranged at *A* as shown, and

the body *B* drawn over the body *C*. Both surfaces were perfectly smooth and well oiled. The proportion of friction estimated from the reckonings on the guage showed that more power was needed to move the body *B* over the body *C* than when a series of set rolls were interposed as marked *D* in Fig. II. These rolls were revolved on pins in the frame *E*. Next some rolls were introduced independently as shown at *F* in Fig. III., and the friction still further reduced. Finally, balls were



put between the bodies as shown in Fig. IV. This system proved to require the least power to operate, thus demonstrating that balls greatly reduce friction between two bodies. Experiments were also tried with a common shaft *A* and bearing *B* as shown in Fig. V., and the degree of power required to revolve the bearing around the shaft estimated from the readings procured from the scale attached to the cord *C*. The latter was wound about the bearing and drawn to turn the same. By using balls as in Fig. VI., the friction was reduced about 20 per cent. As to the types of bearings best adapted to practically uses in knitting machinery there may be a word to say. The cone style of bearing is serviceable and is shown in Fig. VII. in which a section of the cone is given showing the bevel *C* and the ball *B*. In this style there is but one point of contact for the ball and that at the dotted line. In the style shown in Fig. VIII., the balls have several points of contact on the curved cone *E*. This kind is preferable for bearings which must run very steady.

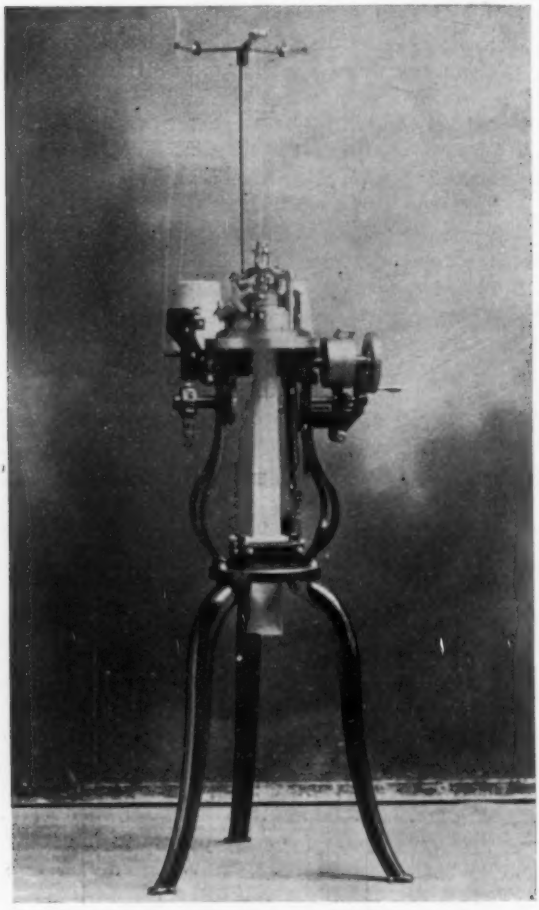


The ordinary style of bearing is shown in Fig. IX., *F F* making the sleeves or brasses. The appearance of this same bearing after having been changed to a ball bearing style is shown in Fig. X. The shaft is first turned down in a lathe to the shape shown and the brasses shaped like *A A*. This principle serves well for common uses in light machinery shafting. A sectional view of a bearing of this sort is presented in Fig. XI., in which the shaft is designated *B* and the additional sleeve *C*, the latter being adjusted in the half boxes. Fig. XII. is given to illustrate the mode of applying ball bearings to small bear-

ings of levers and the like. The shaft is signified *D* and the balls *E*. As ball bearings give good results in the bicycle, wood and metal working machinery, steps for vertical shafts, and in dozens of other places, there is no doubt that they will in time find an important place in the knitting machinery.

Automatic Rib-Top Machine.

Among the many kinds of ribbers built by the Pepper Manufacturing Co., of Lakeport, N. H., we herewith represent, by the accompanying cut, one which has been on the market for a long time; not, however, with all the improvements described below. The machine is known as the Welt and Slack-course Machine, or as the Automatic Rib-top Machine, and is designed for the production of half hose tops with welt and slack course, hose legs, etc. It has, in addition to the improved, adjustable work take-up and sectional cam ring, an automatic device for stopping the machine in case a large knot or bunch in the yarn runs into the needles, or when the work presses off, thus preventing the bunching up of the work on the needles. Also an improvement in the mechanism for forming the welt which admits the knitting, practically, of a four to a six-course welt, without any liability of "stabbing the welt." In the production of stocking legs, or long patterns, a chain shortening device (which has been recently perfected) is used, which gives the full length of pattern with one-half the usual length of pattern chain. With the improved cam mechanism, the friction on the needles is greatly reduced, thus preventing their breakage. With these improvements which are found on all machines built by the above mentioned company, of recent date, the production is greatly increased, while the expense of needles is reduced. In short, these machines rank among the first of their



AUTOMATIC RIB-TOP MACHINE.

class for the quality of fabrics produced from the different kinds of yarn generally used, and for the amount of production.

Reminiscences of Hosiery Sewing Machine Trimmers.

VI.—GIBBONS FRAME.

In all of the patents issued for sewing machine trimmers, it will be noticed the phraseology is "in combination with a sewing machine," etc. It was amusing to see how some people regarded that word *combination*. One builder of trimmers used a separate belt, and drove the trimmer from a shaft independent of the sewing machine, and he thought, and taught purchasers, there could be no danger of infringement, because of such manner of driving. As it is necessary to have the cutting device as near as possible to the needle of the sewing machine, it would make no difference, even though the trimmer were driven by a device from another country, so long as the cutting device was acting with the needle or sewing mechanism.

There were some ingeneous devices gotten up in connection with the trimmer, some in the character of mechanical movements, and some as to separating or parting the work. Among the latter was a chisel point about one-eighth inch wide, which was made to strike a blow on a hard steel plate or disc; another took the form of an ore crusher, or a blunt edge, made segment shape, and oscillated like toggle joints, separating the goods by abrasion. This required considerable power, but did its work quite well. If you have never tried the experiment, you will be surprised upon taking the parallel pieces of round steel, placing a piece of cloth or knitted fabric between them, putting them in the jaws of a vice, and tightening up on them. You will find the goods separated as clean as if cut with a knife or shears. This is the principle upon which the last mentioned device worked. Then there were devices for giving intermitting action to the blade shears, for setting different blades, and for fastening blades. Many of these devices were patented, and I do not think I am presuming too much, when I say about two-thirds of them were not worth the wax in the seal. But some people are ignorant of patents, and run off early (too early), and spend their money for one. Then there are others who are not ignorant of patents, but get them to fool people who are ignorant. I do not want to be understood from these articles as saying that a patent is not any good, but I do want to be understood as saying, a good patent is hard to get, and if any reader of this paper is contemplating applying for a patent trimmer (for straightway seaming and trimming), don't you do it, save your money.

While in a previous article I said that the fundamental principles of the trimmer have been patented, and have expired by limitation, yet there is a difference between sewing and trimming, and trimming and sewing. The early patents were of the former type, sewed, then trimmed, but there are patents of a more recent date, which claim the right to trim the goods first and then sew them. As there is now a suit pending embodying this claim, we will wait and see if there is any difference between horse and cart, or cart and horse. There is a difference which *end* of the horse you first put into the shafts.

—The distribution is much more general in hosiery to retail at 15 cents and under, and in underwear to retail at 35 cents and under, than in higher priced lines. At the same time there are some agents handling goods, with an established reputation, who have done fairly well in better qualities, but this constant striving after cheaper products has, nevertheless, an unfavorable influence over the situation.

POWER DEPARTMENT.

O. R. YOUNG, M. E., Editor.

The Supremacy of Steel.

In the history of the iron and steel industries, both of the United States and other countries, the rapid displacement of one by the ascendancy of the other is without precedent in metallurgical changes. It is true that changes in any form of product are in touch with the intelligence and energy of the age in which they take place, but it is also true that the superior merits of any article decides its success.

This is an age of criticism and analysis as well as of ingenuity and progress. This or that may be boomed prematurely and enjoy a well lubricated popularity for a time, pretension may have a large amount of lung power, and delusive statements make a successful bid for misplaced faith. In the long run, however, the price of existence is the right to live. It is also to be noted in the iron and steel industries that there is no halt in the improvement of processes.

Chemistry is constantly pushing its investigations, determining possibilities and establishing standards. Ingenuity, equally active, goes on its way improving methods and apparatus, and nothing stands still in modern metallurgy. From such causes and for such reasons modern steel has established its supremacy.

It is not long since—the years can be counted on the fingers—when outside of the rail and tool trade iron was practically in the lead. The situation is now reversed, and while the iron working industries will always retain their hold on certain forms of use, yet in a general and wider sense steel making leads the way.

The use of steel in ship building was a broad and radical movement in the way of change and is likely to be permanent and aggressive. The steel framed sky scraper marks another innovation, and in more ways than one is making radical changes in related and dependent labor. It has in fact developed a distinctively new type of industry and a new class of skilled workmen. Not only are structural shapes made to specifications, but the fittings and fastening of the parts made up in the same plant. In fact the manufacturer becomes the constructor of the modern edifice, and it is not a rare occurrence by any means to see a manufacturer sending his own men to distant points where he secured the contract for construction. Conditions are changed with the modern steel maker on the crest of the wave.

In commenting on these conditions, the Commercial Bulletin pertinently says, in reference to two bids on one contract, one being $60 a ton and the other $42.20 per ton: "This price was a surprise to competitors, but it shows what a steel maker can do when he sees it to his advantage to enter the market. Competitors are often at a disadvantage due to prices they have to pay for raw materials which may be controlled by combinations, whereas the large steel manufacturers get their materials at the lowest cost, and are able to circumvent existing combinations."

Drop Cut-off Valve Gears.

WILLIAM A. SMITH.

In this chapter will be given a few of the special forms of drop cut-off valves of the variety used at the present time, which are called the auto-

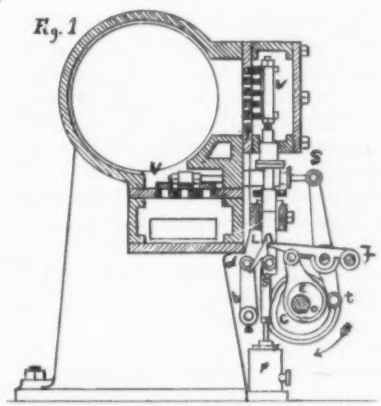
matic cut- off valve, and give a drop, or disengagement, to the valve.

Among these is the Brown engine, Fig. 1, which gives a section through the head end valves and chest; the crank end valve and gears are a duplication of those on the head end. The admission valve (V.) is a five-ported gridiron valve on a vertical valve seat, and the exhaust valve is a three (3) ported gridiron valve on a horizontal seat. Both are controlled by valve gears on the shaft O, which is driven by the engine shaft through a pair of bevel gears, and makes one revolution for each revolution of the engine.

The eccentric, E, which moves the steam valve gives a rapid upward motion to the lever F.

The toe of the lever F catches under the edge of the latch L and lifts the valve V through the spindle SV.

Fig. 1



When the tail of the latch strikes the pin (d) the valve is disengaged from the lever (F), and it falls, which closes it. The pin (d) on the arm (b) is under the control of the governor, through the horizontal shaft. It is commonly said that the governor on an engine with a detachment cut-off, has only the light duty of setting the stop that unlatches and releases the valve, the friction of the governor and the attached parts is, or should be, small. Most of such valve gears throw a shock on the governor, tending to make it race when the cut-off valve is released, and the governor should be powerful in order to resist the shock.

When the tail of the latch (L) strikes the pin (d), the shock tends to open the latch and to throw the pin toward the left; both will yield, but the motion of 'd,' and consequently of the governor, is slight.

The exhaust valve is moved by the cam 'C,' which consists of a groove in the face of a disk, in which works a roller on the end of the lever 't' 's.' The end (s) of the lever being slotted and provided with a block to avoid bending the valve spindle (v. s.).

The action of this cam is the same as an eccentric, except that there are points of rest, when the valve is open or shut.

Fig. 2 shows two ways of laying out such a cam. It is intended to show general principles only, and would require some modification to fit it to the engine shown by Fig. 1.

Suppose, for instance, that the cam acts directly on the end of a horizontal shaft spindle, such as 'v. s.'

It is neither customary or necessary to balance the valves of this type of engine, for they have little pressure on them to produce friction, either when they are moving or at rest. The usual practice is to set the exhaust valve to give compression nearly up to the steam pressure in the steam chest, so that the pressure under the steam valve is nearly equal to the pressure on its admission. The valve drops shut at cut-off, and after it is at rest the steam pressure in the cylinder is reduced by expansion, which is carried down to within a few pounds of the back pressure, so that, at release, the pressure on the exhaust valve is not excessive. The pressure in the cylinder rises after the valve is at rest, owing to compression.

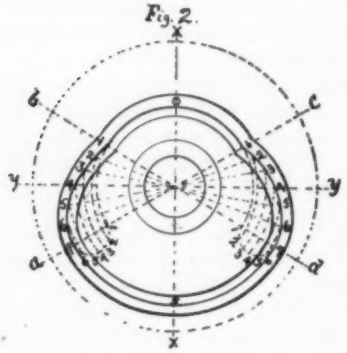
A feature common to many detachment cut-off valves can be well shown by Fig. 1. Supposing the eccentric 'E' has no angular advance, and that the valve has no lead, the valve will open at the beginning of the stroke, and will have its greatest displacement, provided that it is not sooner released, when the piston is at or near half

stroke. If the latch has not then struck the pin (d) it will not strike it at all, and the valve will remain connected to the latch, and will close at or near the end of the stroke.

It is also evident that giving angular advance to the eccentric and lap to the valve will limit still further the range of cut-offs. However, the cut-off may be continued beyond half stroke by giving a negative angular advance to the eccentric and a clearance to the valve.

If an engine with a detachment cut-off that is limited to the first half of the stroke, is over-loaded, there is a liability that a failure to cut-off will occur, in which case the sudden increase of work due to the steam following the piston to the end of the stroke will

Fig. 2.



make the engine run very irregularly.

In adjusting the valves on a Brown engine the marks for the steam valves will be found on the stirup block that passes through the guide. There are two scratch marks, and the distance between them show how much the steam valves should lap over the ports on the bottom side when the port is closed.

When the valve is closed and the dash pot is seated, the upper mark should be just seen at the top edge of the guide block.

By removing the nut and washer from the exhaust cam lever, two scratch marks will be found; these show the lap of the exhaust valve.

In setting the valve, place the engine on the head centre and see if the train of gears are in position to turn the engine in the desired direction; then secure these gears. Next see if the clutch is in engagement, making the side shaft solid; then secure the clutch.

Next turn the head end steam eccentric in the direction the side shaft is to run until the lower mark on the block shows above the edge of the guide one-sixteenth inch; then secure the eccentric by the set screws firmly in position.

Divide the cross head guides into five parts, then turn the engine back (not forward) one of these divisions; it will then have made four-fifths of a stroke.

Turn the exhaust cam ahead until the outer mark on the exhaust lever is just opposite the end of the Russia iron guage that comes with the engine, the other end of the guage being held against the frame.

Now turn the engine ahead and note if the inner mark is approaching the end of the guage, if not, put the engine back again and reset the cam so that when the stroke is completed the inner mark will approach the end of the guage.

Place the engine on crank centre and set crank steam valve in the same manner as the head end, and secure the set screws. Then turn the engine back one-fifth and set the exhaust cam on this end the same as on head end, seeing that the set-screws are set down solid.

Block the governor in its highest position and, by turning the hand wheel, see if each steam valve is tripped before the lower mark on the steam valve stirup block shows above the edge of the guide more than one-sixteenth of an inch, if not, turn the whole cut-off shaft back until it does, or, if the trouble is on one end, adjust that end.

Turn the hand wheel until the clutch engages, then block the governor in the position it is to run with ordinary load. Next turn the engine over slowly and mark how far the cross head has traveled when the steam valve closes.

If the steam valves do not close for

the same piston travel on each end, reset the cut-off pin on the head end, in or out, to make it agree with the crank end. This may have to be tried several times to get the cut-off even. When the engine is running see that when the steam valve is closed, the upper mark on the block just disappears at the edge of the guide; if it does not, by turning the thumb screw in the dash pot, it can be made to disappear, or show above the guide. If this does not cause it to do so, see if the piston of the dash pot strikes anything to prevent its seating.

Engineers have different ways of setting the marks for lap, but the proper way is to remove the chest covers and then, after taking the measures, set the valves and put on the indicator.

Engineers' License Laws.

The agitation concerning the passing of engineers' license laws is spreading throughout the country.

Many of the states are beginning to realize that such a law has become a necessity, and active measures are being taken by the people to secure the passage of the same.

One singular feature in connection with this is that all the best engineers are actively in favor of the move, and while nearly every bill drafted places the expense of procuring the license upon the engineer, they are willing to subordinate their personal interests to those of the public, as the passing of such laws do, without a shadow of doubt, promote the public safety and welfare.

The latest state to fall in line is South Dakota, the following bill having been drafted and presented to the legislature through the efforts of the members of the National Association of Stationary Engineers and their State deputy president, C. D .Palmer:

To the Legislators:

Believing it to be the province and pleasure of our state representatives to give us all the best advantages consistent with an economical distribution of the burdens of government, and believing that Chapter 145, Page 315, of the Session Laws of 1890 (providing for bond against destruction of grain by fire from threshing engines) was good, but that the farmer with other citizens needs some protection against loss of life, caused by steam boiler explosions, in the hands of careless and incompetent engineers, we ask careful and favorable consideration of the following measure.

We think it will be a source of revenue to the state, a good lever to raise the standard of intelligence and care of her steam engineers, and a very potent factor in lessening the destruction of life and property from such cause.

For the last five years, the monthly average in the United States has been: Explosions, 26; deaths therefrom, 26.5; seriously injured, 36.5; and South Dakota has had her share of this great loss.

A BILL.

For An Act to Provide Additional Insurance upon Life and Property in the state, by raising the standard of intelligence and care of her Steam Engineers.

To Provide for the Examination and Licensing of Engineers in charge of Steam Boilers and Steam Generating Apparatus in the State of South Dakota.

To Provide for Carrying out the Provisions of this Act, and prescribing Penalties for their violation.

Article I.

Be it Enacted by the Legislature of the State of South Dakota:

Section 1. That all steam boilers and steam generating apparatus used in the State of South Dakota, except locomotive and marine boilers, carrying ten pounds of steam pressure shall come within the provisions of this act.

Section 2. That there shall be established within the State of South Dakota a Board of five examiners, within 60 days after the passage of this act, to be appointed by the Governor; but no person shall be qualified to act as such Examiner who is not of temperate habits, a citizen of South Dakota, who shall have no interest directly or indirectly, in any patent device or article pertaining to steam engines or

boilers, who shall not be a stationary engineer, having had an actual charge of and control of stationary engines and boilers for at least five years prior to his appointment.

Section 3. It shall be the duty of the Governor to remove from office any member of said board who fails to perform his duties faithfully.

Section 4. The Examiners, before entering upon their duties, shall take and subscribe an oath of office before the Secretary of State, to faithfully perform the duties required of them by law; said oath shall be placed on file in the records of the State.

Section 5. The Examiners shall each give bond approved by the Governor, in the penal sum of $2000, payable to the State of South Dakota, conditional on the faithful performance of their duties.

Section 6. Each member of said board shall receive a salary of 50 per cent. of fees collected—provided farther: That at the December meeting of the Board the work of each Examiner shall be reviewed by the Board, and the Examiner who has graded his work most carefully shall be entitled to 50 per cent. of fees returned to the State by him.

Section 7. The Secretary of State shall provide a suitable office at the State Capitol for said Board, properly supplied with books, stationery, and printed blank forms, as may be required.

Section 8. Within twenty days after appointment the Board shall meet at a place provided and a time appointed by the Governor. They shall organize by electing a president and secretary. They shall provide for regular sessions at the Capitol, in room provided by the Secretary of State, at least once in December each year. They shall apportion the State as equitably as may be into five districts, and appoint a member of said board to each district. Each member shall hold regular examinations in the most central portions or towns of his district, for the examination of applicants for a license, as follows: A list of questions suitable for each grade of engineer's license shall be sent every first Monday in January, April, July and October to the Clerk of the Courts of each county, who shall, by a published notice, so state to engineers, and call them to his office to write answers to same as soon thereafter as possible, forwarding answers and fees collected, according to section 16, to the Examiner. The clerk shall not allow engineers to receive assistance, and shall require them to finish examination before leaving. For the one day's work in each quarter, and the publishing of such notice, the Clerk shall receive the customary fees from the general fund of this county. Each Examiner shall keep a register of applicants for license; of those found qualified, and those unqualified; and shall designate the grade of license issued to each successful applicant, with date of its issuance, also the name, residence, and place of employment. The Board shall have power to establish rules for its work, not inconsistent with this act. Said board shall make biennial reports to the Governor, stating number of licenses granted, and full amount of fees therefor, and shall also state number of explosions having occurred during their term of office, and probable amount of damage to life and property.

Section 9. Said board shall hold office for two years, or until their successors shall have been appointed, and qualified, in manner and form as prescribed in section 2.

Section 10. Said board shall pay all money received for granting of licenses, into the State Treasury every thirty days, except per cent of fees as provided in section 6, taking receipt therefor in duplicate, depositing one with the State Auditor, and filing one with the records of the board.

Section 11. Every person in the state who constructs a boiler or steam pipe, known to be faulty or imperfect, or drifts any rivet hole to make it come fair, or delivers any boiler for use knowing it to be faulty in its flanging, riveting or bracing, or in any of its parts, shall be fined $200, one-half of which shall be paid to the informer.

Section 12. No person shall operate

any steam boiler or steam generator coming within the provision of this act, who has not been examined, found competent, and received a written or printed license so to act; which shall be renewed annually. Any person operating such steam generator without a license, shall be deemed guilty of a misdemeanor and subject to a fine of not less than $10 nor more than $25. Any owner, leasor or operator of such machinery, who shall permit it to be run or operated by a man without a license shall be deemed equally guilty and shall pay not less than $25 or over $250.

Section 13. Any person applying for a license shall deposit with the clerk the fee, for class of license he shall desire (one-half of which shall be returned if unsuccessful), shall make oath to the time he has had charge of and operated an engine, and shall pass the required examination.

Section 14. Licenses shall be graded as follows: Chief, First Class, Second Class and Special.

A Chief license shall entitle the holder thereof to take charge of any steam engine or set of boilers.

A First Class license shall qualify the holder thereof to take charge of any engine or boiler not exceeding 300 horse-power.

A Second Class license shall qualify the holder thereof to take charge of any engine or boiler not exceeding 100 horse power.

A Special license shall qualify the holder thereof to take charge of any engine or boiler not exceeding 10 horse power.

Section 15. Each license shall be signed by the president of the board and the examiner of the district.

Section 16. The fees for licenses shall be as follows:

A Chief license shall cost the applicant, $5. Its renewal, $2.50.

A First Class license shall cost the applicant, $4.00. Its renewal, $2.00.

A Second Class license shall cost the applicant, $3.00. Its renewal, $1.50.

A Special license shall cost the applicant, $2.00. Its renewal, $1.00.

Section 17. Licenses shall be renewed annually; and at the discretion of the Examiner of the district, without examination.

Section 18. Any engineer found in a state of intoxication, or who shall allow his engine to become in a dangerous condition, shall forfeit his license for 12 months—provided, farther, that any employer of an engineer whose work shall require a second class license or upwards, shall be notified by his engineer that certain repairs are necessary for safety of life and property, and failing to make such repairs, shall under a penalty of $25.00, call in another engineer of equal grade as his employee to examine his engine or boiler—and report of repairs needed by such two engineers shall be final and such repairs must be made under a penalty of $25.00 for each day thereafter, until repairs are made.

Section 19. Nothing in this act shall be so construed as to release from criminal prosecution or action for damages, any person who shall cause damage to life or property by the explosion of any steam boiler, or fire set by any steam plant.

Section 20. Whereas—There being no adequate law on this subject an emergency is hereby declared to exist and this act shall be in full force and effect 30 days after its passage and approval, and all acts and parts of acts in conflict with this act, are hereby repealed.

Marine Engine Progress.

Although the advances now being made in marine engineering are not by any means of a revolutionary character, they are, nevertheless, of interest as indicating the directions in which improvement is at present being looked for.

An example of this kind is offered by a comparison of the new engines of the White Star liner, Germanic, with those they are to replace.

The old engines were compound, with two high-pressure and two low-pressure cylinders, arranged with the high-pressure cylinders on top of the

low. The high-pressure cylinders were 48 by 60 inches, and two low-pressure cylinders 83 by 60 inches. The boiler pressure was 60 pounds, and at a speed of fifty revolutions they developed 5700 I. H. P.

The boilers had 19,500 square feet of heating surface and 680 square feet of grate. The new engines are triple expansion, with cylinders 35 1-2, 58 1-2 and 96 inches in diameter, and 69 inches stroke. The steam pressure has been increased to 170 pounds, and the new boilers have 18,169 square feet of heating surface and 558.6 square feet of grate. The new engines will develop 6500 H. P.

It may be noted in passing that during the last twenty years the old engines have propelled the boat across the Atlantic 422 times, covering a total distance of over 1,000,000 miles.

Another matter of interest at the moment is the marked economy which is claimed for the new Atlantic liner, St. Paul.

A consumption of 1.22 pounds per I. H. P. per hour is a sufficiently good result to cause doubt to be expressed in certain quarters as to the accuracy of the data from which these figures are deduced. The engines are recorded as running, the port 90.7 revolutions and developing 10,849 I. H. P., and the starboard 90.2, and developing 10,723 I. H. P. The boiler pressure is 198 pounds, and the vacuum 25 inches.

No doubt some more reliable tests will be made as to the economy of the engines before these figures are accepted as trustworthy, and in the event of the results being confirmed, we should imagine more attention will be given to quadruple expansion as a means of improving the economy of the marine engine.

Turning to our Continental rivals, we find a marked activity displayed by the German lines. Thus, the North German Lloyd Company is building nine new ships, including two fast twin-screw express steamers intended for service between Bremen and New York. One is being built at Flushing and the other at Stettin. Of the other seven boats, four are intended for the Trans-Atlantic, and three for the Brazil service.

The Hamburg-American Company expects to put in commission by October its new steamship, Pennsylvania, which will be one of the largest vessels afloat, her loaded displacement being 20,000 tons. Her sister ship has just been contracted for, and will be built at Hamburg. The Hamburg American Company is also building a fleet of six new ships for the Hamburg-Baltimore service.

The two fast express steamers have to meet a guarantee of a minimum of 21 knots for two years' Atlantic steaming, when the draught is 28 1-4 feet, while the full speed trial of six hours' duration requires 22 1-2 knots to be maintained.

The engines of the Flushing-built boat are to resemble in some respects the arrangement adopted in the North German Lloyd steamer Lahn, in respect that two of the three cranks will have two cylinders working tandem, but instead of it being the fore and aft cranks it will be the two forward cranks, and there will be four in place of three stages of steam expansion. The forward crank will be worked by the high pressure and one of the two low-pressure cylinders, the second crank by the first intermediate and the other low-pressure cylinder, and the after crank by the second intermediate cylinder alone. The steam pressure is to be 220 pounds, and the cylinder diameters 36.09, 53.48, 76,77, and two of 77.76 inches. The stroke will be 58.78 inches.

The shafts are to be of nickel steel (which is also largely used otherwise to reduce weight), the diameter for crank and propeller shafts being 19.68 inches, with a 7 1-4 inch hole. The propellers of bronze are to be 20.34 feet in diameter, and the pitch will probably be 32.8 feet. As to boiler power, the heating surface is to be 76,430 square feet, and the grate area 1442. —[Mechanical World.

COLORS AND DYEING.

Dye Recipes for March.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $3.

RECIPE NO. 33.

Green on Cotton.

Direct Green on 100 lbs. cotton yarn.

Prepare dye bath with

3 lbs. Direct Green Y.
(A. Klipstein & Co., 122 Pearl St., New York.)

Enter in yarn at boil and turn 15 minutes at that heat; then add 20 pounds Glauber's Salt, and turn one hour at boil.

Direct Green Y. will dye a full, dark and bright color with a 3 per cent. dyeing. The bath will exhaust much quicker if about 3 per cent. Acetic Acid is added to the dyebath. For mixed cotton and wool goods, Direct Green Y is very well adapted.

RECIPE NO. 34.

Golden Yellow on Worsted.

Golden Yellow on 100 lbs. worsted yarn.

Mordant at boil for 1 1-2 hours with

3 lbs. Bichromate of Potash,
2 lbs. Tartar.

Wash and dye with

10 lbs. Extract Fustic L.
(Stamford Mfg. Co., 133 Front St., New York.)

Enter in yarn at boil and turn 1 1-2 hours at that heat.

A very full shade of deep, golden yellow is shown above, produced with Extract of Fustic L. By looking across the sample, the richness of the extract and its purity is shown. It is a very concentrated extract and very well adapted to use in combination with Alizarine and other extracts. It is fast to light and soaping. We show a heavy dyeing in order to show the pure shade of color.

RECIPE NO. 35.

Medium Blue on Worsted.

Medium Blue on 100 lbs. worsted yarn.

Make up dye bath with

2 lbs. Naphtazine Blue O.
(Victor Koechl & Co., 79 Murray St., New York.
4 lbs. Oil Vitriol.
10 lbs. Glauber's Salt.

Enter in yarn at 140° F. Bring to boil while turning and turn to shade at that heat.

Naphtazine Blue is fast to rubbing, hot water and stoving. It will also stand the carbonizing process, resists soaping; and, if treated subsequently with chrome, extremely fast shades can be produced.

RECIPE NO. 36.

Black on Shoddy Yarn.

One dip black on 100 lbs. shoddy yarn.

Prepare dye bath with

15 lbs. Logwood Liquor, No. 65
(Stamford Mfg. Co., 133 Front St., New York.)
2 lbs. Soda Ash.
1½ lbs. Blue Vitriol.

Enter in yarn at boil; turn 1 1-2 hours at that heat; shut off steam and turn 1 2 hour longer; lift out, let lay for 1 hour, extract and dry.

For dyeing a one-dip black on low stock, logwood liquor No. 65 is very well adapted. It is also a good extract to use on cotton. The cost of dyeing a black on the different kinds of stock is very cheap, especially when dyed in one dip, as the dye works very level. The above recipe is for standing kettles. It will take 25 pounds for starting kettle.

RECIPE NO. 37.

Scarlet on Wool Yarn.

Scarlet on 100 lbs. wool yarn

Prepare dye bath with

2½ lbs. Lake Scarlet 3 R.
(Wm. J. Matheson & Co., Ltd., 178 Front St., New York.)
6 lbs. Oil of Vitriol.
20 lbs. Glauber's Salt.

Enter in yarn at 130°, bring to boil while turning, and turn to shade at that heat.

The Lake Scarlets are noted for the brilliant and fiery shades that they produce; also for their fastness to light and milling. They are also used largely for making lakes which adds to their usefulness.

RECIPE NO. 38.

Light Blue on Cotton Yarn.

Light Blue on 100 lbs. cotton yarn.

Prepare dye bath with

1 lb. Eric Blue G. G.
(New York and Boston Dyewood Co., 55 Beekman St., New York.
10 lbs. Glauber's Salt.
1 lb. Sal Soda.

Enter in yarn at boil and turn one hour at that heat.

Eris Blue G. G. is a new blue on the market. Dyers will find it to be an elegant blue, as well as a fast blue. It will work on either cotton or wool. The dyeings are fast to light and soap, and will resist acids. Fine shades can be dyed on wool with the addition of Glauber's Salt and Acetic Acid mordant.

RECIPE NO. 39.

Olive Bronze on Cotton Yarn.

Olive Bronze on 100 lbs. cotton yarn.

Prepare dye bath with

1 lb. Tolulyne Orange.
¼ lb. New Direct Blue B.
(New York & Boston Dyewood Co., 55 Beekman St. New York.)
10 lbs. Glauber's Salt.
3 lbs. Fankhausine
(Nashoba Co., Ayer, Mass.)

Enter in yarn at boil and turn at that heat one hour.

When Fankhausine is used with the direct dyes, better results can be obtained on account of its making the colors penetrate the fibre. It also makes the colors work evenly on the fibre, producing brighter shades, and less color is needed to dye any given shade.

RECIPE NO. 40.

Red on Cotton Flannel.

Alkali Red on 100 lbs. cotton flannel:

Start the bath by dissolving

5 lbs. Alkali Red in 50 gallons of hot water.
(A. Klipstein & Co., 122 Pearl St., New York.)

With the addition of

2 gallons Caustic Soda Lye, 60° Tw.

When dissolved add 150 lbs. of salt, and enough water to make 100 gallon bath. Enter in yarn at 160° F., and bring temperature up to 180° while turning, and turn one-half hour at that heat. Squeeze and wash well in cold water. The foregoing quantity is for starting bath.

The dye bath is not exhausted, and can be used again by adding 3 lbs. more Alkali Red for each subsequent lot of 100 lbs. of cotton. No more *salt* is required after the first setting up of the bath, and the subsequent lots of Alkali Red must be dissolved before being added in as little water as possible, with addition of one quart of caustic soda (60° Tw.) for each 3 lbs. of color. The dye bath must always remain at the same concentration, viz., 21° Tw. at 60° F., and care must, therefore, be taken that it does not become diluted by condensation of steam or concentrated by evaporation. If a smaller bath is used, the salt must be proportionately diminished, since the quantity of salt required depends on the quantity of water present, and not on the amount of cotton to be dyed, or the weight of color used. The caustic soda, on the other hand, is chiefly dependent on the weight of cotton, and can only be slightly diminished by diminishing the water. Thus, if the above weight of cotton is to be dyed in a bath of 50 gallons instead of 100 gallons, the same quantity of color must be used, 75 lbs. of salt, and about one gallon of caustic

soda (60° Tw.) Similarly, if a larger amount of liquor has to be used than that given above, the salt must be proportionately increased, whilst the color and caustic soda remain the same. Under all circumstances, the bath should contain 1½ lbs. of salt per gallon, and the gravity at 60° F. should be 21° Tw. The above proportions are calculated for full shades of scarlet. If lighter shades are required (pinks, etc.), less color should be used, but the concentration of the bath must remain nearly the same. Cotton in hank or skein is best divided into lots of about 10 lbs., and worked separately in a small bath, which is replenished with fresh color solution after each lot. Dye for 10 to 15 minutes at a temperature of 170-180° F., then raise and wash thoroughly in cold water, as above.

To obtain good results, especial care must be paid to the following points: (1) The concentration of the dye bath, *i. e.*, quantity of salt per gallon, must be exactly that given above; (2) the temperature of the bath must not be too high (200° F. at highest); (3) the dyeing should be performed as quickly as possible: (4) the cotton must be thoroughly washed after coming from the dye bath, to remove every trace of caustic soda.

RECIPE NO. 41.

Golden Brown on Worsted.

Golden Brown on 100 lbs. Worsted Yarn:

Mordant for one hour at boil with
- 3 lbs. Bichromate of Potash.
- 2 lbs. Tartar.

Wash and dye with
- 5 lbs. Anthranine Yellow.
- ½ lb. Alizarine Violet.
  (F. E. Atteaux & Co. 172 Purchase St., Boston.)
- 2 lbs. Acetic Acid.

Enter in at 160° F. Bring up to boil while turning, and turn one hour at that heat.

The above combination of colors produces a fine shade of golden brown, and by varying the amount of the two colors, a great many shades of brown can be dyed. These colors are perfectly fast to light and soap and dye very evenly on the fibre.

RECIPE NO. 42.

Medium Blue on Worsted.

Medium Blue on 100 lbs. Worsted Yarn:

Mordant for one hour at boil with
- 2½ lbs. Bichromate of Potash.
- 1 lb. Galaxy Acid.
  (John J. Keller & Co., 161 Murray St., New York.)

Wash off and dye with
- 2 lbs. Chrome Blue 2 B.
  (John J. Keller & Co.
- 2 lbs. Acetic Acid.

Enter in yarn at 150° F., bring to boil while turning, and turn one hour at that heat; lift and wash.

The above shade of blue is a very bright and clean looking color. Chrome blues will be found to be very fine and easy colors to work, as they go on the fibre very slowly, giving level shades. They are fast and will combine with dye-wood extracts. Chrome blues give brighter shades than Alizarines.

RECIPE NO. 43.

Reddish Brown on Worsted.

Reddish Brown on 160 lbs. worsted Yarn:

Mordant at boil for 1 1-2 hours with
- 2 lbs. Bichromate of Potash.
- 1½ lbs. Tartar.

Wash and dye with
- 4 oz. Alizarine Red (powder).
- 4 oz. Alizarine Yellow G (powder, patented).
- 4 oz. Alizarine Green (powder).
  (C. Bischoff & Co., 89 Park Place New York.)
- 1 lb. Acetic Acid.

Enter in yarn at 130° F. Bring to boil while turning, and turn to shade at that heat.

A fast shade is shown above, with a combination of three colors. The colors also produce, when dyed separately, fine bloomy shades, which are very fast to all mill tests.

RECIPE NO. 44.

Dark Brown on Cotton Yarn.

Direct Fast Brown B on 100 lbs. cotton yarn:

Prepare dye bath with

4 lbs. Direct Fast Brown B.
(Farbenfabriken of Elberfeld Co., 77 William St., New York.

15 lbs. Common Salt.

Enter in yarn at boil; turn one hour at that heat.

Less color is used in the remaining baths.

The shade shown above is a full, deep shade of brown, with a violet tint. This brown, like Direct Fast Brown G. G., and Bronze Brown, is fast to soaping and light. It will combine with the other browns, and this will enable the dyer to procure a large number of brown shades.

RECIPE NO. 45.

Brown on Worsted.

Brown on 100 lbs. Worsted Yarn:

Mordant for one hour at boil with

3 lbs. Bichromate of Potash.
2 lbs. Tartar.

Wash and dye with

5 lbs. Anthranine Yellow.
3 lbs. Alizarine Violet.
(F. E. Arteaux & Co., 172 Purchase St., Boston.)
2 lbs. Acetic Acid.

Enter in yarn at 160° F. Bring temperature up to boil while turning, and turn to shade at that heat.

By combining the Anthranine Yellow and Alizarine Violet together, the dyer can obtain a number of browns, both light and dark shades. Both colors combine well together, and work evenly on the fibre.

RECIPE NO. 46.

Medium Blue on Worsted.

Chrome Blue on 100 lbs. worsted yarn:

Mordant for one hour at boil with

2½ lbs. Bichromate of Potash.
1 lb. Galaxy Acid.
(John J. Keller & Co., 104 Murray St., New York.

Wash off and dye with

2 lbs. Chrome Blue P E.
(John J. Keller & Co.)
2 lbs Acetic Acid.

Enter in yarn at 150°. Bring up to boil while turning and turn one hour at that heat.

Chrome Blue P E is more of a redder shade than the Chrome Blue 2 B. The importers have several grades of these blues, which will enable the dyer to produce any required shade needed.

RECIPE NO. 47.

Scarlet on Wool Yarn.

Scarlet on 100 lbs. wool yarn:

Prepare dye bath with

2½ lbs. Lake Scarlet 2 R.
(Wm. J. Matheson & Co., Ltd., 178 Front St., New York.)
6 lbs. Oil of Vitriol.
20 lbs. Glauber's Salt.

Enter in yarn at 130° F. Bring to boil while turning, and turn to shade at that heat.

Lake Scarlet 2 R produces a more yellow shade than the Lake Scarlet 3 R, but as there is a large demand for both brands of colors, we show dyeings of the two shades. See Recipe 37.

RECIPE NO. 48.

Black on Worsted Yarn.

Black on 100 lbs. worsted yarn:

Make up dye bath with

3½ lbs. Azo Acid Black B.
1½ lbs. Azo Acid Black G.
(Victor Koechl & Co., 79 Murray St., New York.)
4 lbs. Oil Vitriol.
10 lbs. Glauber's Salt.

Enter in yarn at 140° F. Bring to boil while turning, and turn to shade at that heat.

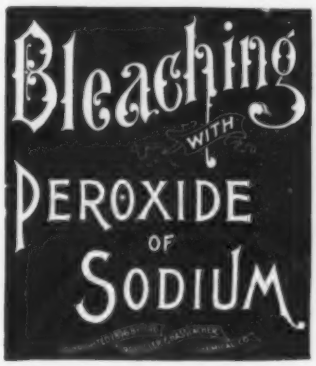
The above combination of two blacks produces a full, deep shade. The importers have still another black, which is known as Azo Acid Black R. The dyer will find that he will be able to produce any required shade of black by using them separately or in combination. They work clean on the yarn and dye fast shades.

New Dyes.

We call attention to some dyes that have been recently placed on the market and represented in our dyeing recipes of this month. A new substantive color is thus represented in Erie Blue G G, furnished by the New York and Boston Dyewood Co., New York,

BLEACHERS:

Having started our Peroxide Works at Niagara Falls, we are prepared to execute the largest contracts promptly, and at greatly reduced prices.



Write for pamphlet on:

THE ROESSLER & HASSLACHER CHEMICAL COMPANY,

73 Pine St., New York.

a dye which possesses important advantages for cotton and wool. The dyeings are perfectly fast to alkalies and acids, and are only temporarily reddened by hot ironing and calendering. Very brilliant, full, navy blue shades are obtained, fast to milling and stoving. It acts favorably on silk.

An Alizarine Green Powder B, furnished by C. Bischoff & Co., New York, is another color, which may also be used as a one-dip fast color by dyeing with Oil of Vitriol and Glauber's Salt, when a kind of cloudy red is obtained, which is very easily converted into green by adding Bichromate of Potash into the dyebath. In our recipe, this powder is used with other Alizarine powders from the same house, upon wool.

We present in our recipes two materials which must impress dyers with their value, (to be found in recipes 42 and 46), Galaxy Acid and Chrome Blue 2B and P E, supplied by John J Keller & Co., New York. The color represented in these recipes is a Medium Blue on worsted. The Chrome Blues are intended to take the place of paste Alizarine Blues, to a great extent. They are in powder form, readily soluble in boiling water, and are not injured nor changed in strength by long storing or climatic influences. They go on the fibre very slowly and evenly, producing shades which are fast to light and fulling. They combine excellently with logwood and fustic extracts or any other colors which dye on a chrome mordant. The Galaxy Acid is intended as a substitute for tartar, argols, oxalic and sulphuric acid in chrome mordanting. It is claimed that the advantages of this article are, in the first place, a considerable saving of bichromate of potash, and, in the second place, better, faster, brighter, and deeper results than are obtained on a chrome or tartar mordant.

In recipes 34 and 36 will be noticed the use of Extract Fustic L and Logwood Liquor No. 65, obtained from the Stamford Manufacturing Company, New York. The Fustic Extract L is a very clean dye in its work, producing attractive results. The merits of Logwood Liquor No. 65 will be seen in the dyed sample for the production of black.

The Practical Dyer.

The practical dyer can improve the appearance of everything he does, or it would be useless to pay the expense of dyeing. The general appearance of goods, the first impressions, are one-half the sale to the salesman. If we can use a grade of yarn to produce a shade that costs 20 per cent. less than the yarn we are using, even though such would increase the cost to our department 5 per cent., or if we could

make the goods worth 20 per cent. more by adding 5 per cent. extra cost to the dyeing, it is our duty to do so; we make for our master 15 per cent. in either case, and he will eventually give credit where it belongs. To be able to dye a dress black, blue or brown does not make us practical dyers; to be able to dye a few pieces of cloth or a few hundred pounds of yarn per day will not make us practical dyers. Our mothers could dye good blacks, blues or browns, yet never claimed to be practical. Our helpers can dye a few pieces of cloth or a few batches of yarn, but do not claim to be practical dyers. The practical dyer of thirty years back would not do to-day, unless he had kept up with the new discoveries; his methods would be too slow and too expensive for the demands of to-day. In those days the dyer used different drugs from what he has at his disposal to-day. During the last thirty years dyestuffs have undergone a complete change through the combined efforts of the chemist and the practical dyer. The one discovered, the other has made the discoveries practical. Berthollet was all that could be desired in France in 1780, and could justly claim the title of practical dyer, but his recipes to-day are valueless except as relics of bygone days. Bancroft, Napier, O'Neal and others were practical men in their day, and deserved credit, praise and honor for what they have contributed to the trade, but we live later. The practical dyer must have courage to acknowledge a fault however trivial, and not act cowardly by throwing the blame on some one else, as well as to resent blame that belongs to some other department and which is very often blamed on the dyer. Oftentimes he loses his position through lack of courage. He must have courage in ruling his help; if bad help, courage to discharge them; must insist on his commands being carried into effect. Oftentimes things go wrong in the dyehouse through disobedience. If bad drugs, have courage to condemn them; if fault to find with the goods, have courage to find fault; you will be working for your master's interest and he cannot help but appreciate your motives. The practical dyer must be a careful man, always watching for opportunities to maintain good work throughout his department. Show me a careless overseer and I will show you careless help. On the contrary, a careful overseer will never have careless help. Rule of thumb and guess work days are gone by. Revive them and you can be sure that one-half of your dyestuff will flow down the sewer, your mismatches and consequent redyes demand the use of more dyestuff, more steam, time, and in the end you will have lots of rotten and tender goods.—[Jas. Scholfield, before Foreman Dyers' Mutual Improvement Association.

Two-color Dyeing.

A firm of Leeds dyers have recently completed experiments with a simple method of dyeing, by means of which a thin felt or cloth may be dyed with a different shade on each side, thus producing a reversible cloth giving the effect of an ordinary dyed felt or cloth with a lining. As applied to mantle cloths, skirting felts, boot and shoe felts, hat felts, and goods of a like kind, material treated in the way provided will probably be very useful, the necessity of an extra lining being done away with. The cloth or material to be treated is in the first instance dyed through in any shade of color that may be desired in any ordinary manner. The material is then finished by the ordinary and usual processes, after which it is taken to a printing machine, which is provided with a roller engraved uniformly all over the surface with diagonal lines cut somewhat deeply and running in one direction over its surface, while diagonal lines cut less deeply are arranged running in the other direction. This roller dips into a bath of color of the required shade and

carries it up to the cloth, which is, by means of other rollers, brought into contact with the dyeing roller. With a view to preventing the color from the dyeing roller penetrating too deeply into the texture of the cloth, the dyeing roller is carefully adjusted in its pressure so as to prevent the second color going more than half-way through the thickness of the piece. Screw levers are arranged upon each end of the roller by means of which the pressure may be graduated as desired. After the second color has been applied to the cloth, the latter is steamed and finished in any ordinary manner.

Roundabout Notes.

A process has been patented in Germany for preventing the browning during rinsing of cotton-lap boiled with soda lye for bleaching. This results, as is well known, from the precipitation of a brown substance in the cotton when the lye becomes diluted. The process simply consists in subjecting the material to the action of sulphurous acid before the bleaching powder is used, but it is said to be quite effective.

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Ordinarily in woolen printing the material is first chlored and the process certainly gives a somewhat harsh handle to the wool. Buyers now propose to impregnate the wool before printing with dilute solutions of bromates or to add the bromates to the printing color. The process has the advantage over chlorination that the wool remains soft, retains its milling properties, and it is also possible to print on it coloring matters such as the sulphon cyanines, which were not hitherto available in woolen printing.

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Bloede's German patent for steam aniline black seems a reversal of former processes. The fibre is first impregnated with the oxidizing agent, and then exposed to the vapors of aniline, or of a volatile acid salt of aniline until the depth of shade desired is obtained.

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An article in the Berlin Færber Zeitung on new thickenings, depends for its value upon a useful hint which the author gives as to the treatment of a very old thickening. The Asiatic variety of gum tragacanth is recommended as being very productive, three per cent. solutions making a good thickening. Wool printed with it has only a slightly yellow tint, after steaming, and this can easily be washed out. The disadvantage of the thickening, however, is that it becomes thin after a few hours and cannot be kept for two days. This is very probably due to fermentation, and the author states that he has used with success a 40 per cent. solution of formaldehyde as an antiseptic for preventing this fermentation, and the same trouble in thickenings generally. An addition of from one to three per cent. of this solution prevents the formation of mildew, and it has no action at all on the textile material.

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In alizarine Turkey red dyeing no greater improvement has been made than the process patented in Germany by Erban and Specht, in 1890. Mark the date. The method which made the fame of these two chemists, consists in dissolving the alizarine in ammonia. This was the only important point of variation from former methods. Now, a document deposited under seal with the Mulhouse Society in June, 1886, by T. Baldensberger, proves to be the identical method patented by Erban and Specht. After describing the faults of ordinary methods, Baldensberger says: "In order to obviate these inconveniences it is sufficient to first dissolve the alizarine in ammonia, the dyeing then being done well and promptly." This really is a most extraordinary thing. It seems impossible to divine why this document, deposited in 1886, was not opened, at least when the

Erban-Specht process was given to the world in 1890.

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In order to suppress or to diminish the tendeney of certain tissues such as flannels and shirtings to shrink, a French patent proposes to run the goods through a strong solution of borax mixed with albumen and a dilute acid with or without the addition of alum. It is asserted that this treatment preserves the goods from shrinking not only when they become damp in wearing but also after thorough washing.

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In removing stains, the ordinary way is to moisten the spot with benzine or some other solvent or simply with water. The stain is then rubbed with a brush or a pad of cloth, and then the solvent is allowed to evaporate off. This process is good but not exactly flawless. As a rule the stains only disappear superficially, they are not really taken up by the brush but are rendered less apparent by being spread over a larger area. A French expert now proposes to moisten the spot with a suitable solvent and then to place the stuff into an apparatus in which a vacuum can be made. He asserts that in a vacuum the stain disappears entirely.

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Cassella's Diamines have been growing constantly in favor with the calico printers. They make good printing colors and are easy to discharge in white and colors. Ude in a French contemporary points out that their resistance to caustic alkalies makes them good coloring matters for mercerisation. As this is a style very much in vogue at present his notes are useful. The mercerising is done either by padding the whole piece or in stripes and patterns. Some very pretty effects are easily produced in this way. Quite a long list of the diamines can be used in this manner with caustic soda—the browns, the fast yellows, orange, scarlet, fast red, the blues, Diamine Green B, several blacks, Diamine Bordeaux B and Diamine Violet N. Some of these even increase in intensity under the action of the caustic soda. Oxy-diamine Black N is an example of this.

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A few of the colors will even resist a slight steaming after being printed with caustic soda. These are Diamine Orange B, Diamine Pure Blue FF, Diamine Brown 3G, Diamine Jet Black SS, Oxy-diamine Black N and Diaminogene B. A few of the others give not quite so good results on steaming, but this is a useful assortment.

—When first cut down, logwood has a yellowish-brown color, but on exposure to the air it gradually develops a more or less superficial rich brownish-red color. It is exported in the form of rough logs, from which the outer bark has been removed; but, before being employed by the dyer, the wood is reduced to small chips, or rasped to powder, these products being distinguished respectfully as "chipped logwood" and "rasped" or "ground logwood." Many liquid and solid "extracts of logwood" are also employed.

—The *stuffing and saddening* process has lost much of its importance since the use of camwood and the insoluble red woods generally has become so limited. With these dyestuffs it was employed with all mordants, but in conjunction with other dyes it is chiefly useful with copper and iron mordants.

—Until recent years bichromate of potash was the only chromate in use. This product presents the great advantage of being nearly chemically pure. Latterly it has in numerous applications been replaced by bichromate of soda, which is about 30 per cent. cheaper, and is much more readily soluble in water; the quantity of chromic acid contained in both is very nearly the same.

—The bichromates of potash and of soda are to a considerable extent employed in cotton dyeing. Aniline black consumes enormous quantities of it both in dyeing and printing.

QUESTIONS AND ANSWERS.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

Wool Carding, Etc.

Editor Textile World:

I want to get a first-class book on wool carding, one that contains full information how to calculate for making certain weight of slubbing, from the first and second breakers, and of roving on the finisher; the rules for changing gears, etc., also for feeds. I would also like to get a book upon raw stock dyeing; also cotton warp dyeing and sizeing.

Philadelphia. E. R.

[We would refer our correspondent to the following works as being the best that we know of: "Sizing and Mildew in Cotton Goods," by Davis & Dreyfus, second edition, 8 vo., 262 pages; price $3.50. "Manual of Dyeing," by Knecht, Rawson & Lowenthal, three volumes, 8 vo.; price $15.00. (It can, perhaps, be got for less). "The Wool Carder's Vade Mecum," 396 pages, published in 1851. The best thing, however, for our correspondent, is to carefully follow the Dyeing Department and Dyers' Supplement of the Textile World.]

Method for Handling Hosiery.

Editor Textile World:

Will you kindly inform me what is the best process for handling half-hose and rib hose after they have been returned from the dyeing establishment, so as to ensure rapid work and perfect finish? According to the method that we are now using, we get a good finish, but the process is too slow. The way that we are doing now is to soak the hose thoroughly, and then ring out just before boarding. The half-hose is put in a box, which is set over the press, where they dry, requiring about twenty minutes' time. They are then taken and pressed between boards; the rib hose being likewise treated, except when pressed between boards the ribs are protected from coming in contact with the press, as the latter seems to affect the dye and also grain.

Alabama. V. H. M.

[What our correspondent wants is not exactly clear to us in all particulars, but we will endeavor to answer him the best we know how. We should recommend our correspondent getting some good mechanical dryer, such as is advertised in this magazine. His process seems to be mostly hand work, and necessarily must be a slow one. We should also recommend that he obtain a hydro-extractor in which to put his hose before they are put in a dryer, although this latter machine is not necessary, provided he has his hose returned from the dryer simply damp. Of course, the matter of pressing depends upon his class of trade. There are only two ways of pressing; one on a form, and the other, off the form and between press papers. Some are pressed hot, and some are pressed cold. That which is most desired must depend upon his line of customers. Ribbed goods are a little difficult. Some manufacturers put the foot, only, in the press, pressing hard, then immediately loosening up and pushing the stocking all the way in, and give only a slight squeeze.]

Machines for Knitting Gloves.

Editor Textile World:

Will you please inform me where I can find the necessary machinery for making gloves and mittens, all cotton goods?

Georgia. A. B. H.

[We do not know of but one concern where such machinery can be obtained, as factories that make these articles generally have machines of their own make, or those made for them. We reply more fully by letter.]

Machine for Square Stitch Shawls.

Editor Textile World:

Will you inform us where we can find a machine or loom that makes the square stitch shawls that have been used so extensively for the last two years?

Iowa. P. K. W.

[Most of the machines made for such work are constructed especially for the parties that use them. The old style rib machine might be used for such a purpose, but whether or not this is exactly what is wanted, we cannot say. From the information furnished by our correspondent, the best way to do is to send us a sample of the work that it is desired to accomplish. Does our correspondent refer to a machine for making fascinator shawls? If so, we can refer him to a Philadelphia party. These shawls are made on double rib machines.]

Heavy Jute Cloth.

Editor Textile World:

Will you be so kind as to advise us where we can obtain some heavy jute cloth like the enclosed sample?

Kentucky. F. G.

[We would suggest that our correspondent write to James Scott & Sons, 73 Leonard St., New York, as they are large importers of such stuff. The sample sent us, we should judge, would weigh about one pound to the yard, 45 inches wide. This house can give the necessary information, probably, if it cannot furnish the goods.]

Manufacturers of Tapestries.

Editor Textile World:

Will you kindly give me the names and addresses of mills manufacturing silk and cotton tapestries used by furniture manufacturers?

Ohio. M. G.

[We refer our correspondent to our Textile Directory, which will soon be issued. It will furnish him with all the data that he inquires for.]

Silk and Cotton Binding Wanted.

Editor Textile World:

Enclosed pleased find samples of silk and cotton binding. Can you inform me where I can obtain such binding?

[If our correspondent will consult our advertising columns, he will undoubtedly see the names of parties who manufacture this class of fabric. See classified index for buyers—"Tapes and Braids."]

Dye Terms.

Editor Textile World:

I see the term "wood vinegar" employed in some dyeing receipts. Has this any other name? Is chrome a proper term to be used in a dyeing recipe?

Blackstone. X.

[Wood vinegar is acetic acid. A better term to use than chrome is bi-chromate of potassa.]

Maco.

Editor Textile World:

Will you kindly oblige me with the following information concerning Maco or "real Maco," as used by American and German hosiery dealers. Is Maco a quality of cotton, or an artificial finish put on raw cotton, or a special preparation, or a stain dye, or some specific ingredient introduced during the spinning of the cotton? I find many German makers stamp both brown and fast black cotton hose and half hose with these stamps—"Maco," and "Real Maco," on the foot bottom, and being connected with the hosiery trade, wish to know what the words mean. I wrote to the Textile Mercury, England, and their reply was that the word was more strictly American, and suggested my writing to you on the matter.

Nottingham, England. H. D.

[In reply to our correspondent, we have to say that Maco means simply Egyptian cotton, nothing more. At one time all Egyptian cotton was known as Maco, so named after a large planter of cotton in Egypt. The term is familiar to those using this kind of cotton in Middle Europe. Maco, the planter, we think, was a Swiss. The term is not an American one, but, as can be readily inferred, is more German and Swiss. A Frenchman by the name of Jumel also did much toward the cultivation of cotton, and at one time Egyptian cotton went under the name of Maco-Jumel. To-day, in France, Egyptian cotton is commonly known under the name of Jumel. When the word Maco is used in this country, it is simply for goods in imitation of German importations.]

Time-Keeping Calculator.

Editor Textile World:

I wish to get a calculator for our mill time-keeper, something similar to the cotton calculators in general use. I suppose such books are to be found, but I do not know from whom to order. Can you give me the address of the publishers or sellers of such a book?

South Carolina. A. H. T.

[We do not know of any book that is published that would suit our correspondent, other than the "Unique Calculator," published and furnished by J. Watts Robinson, whose present address is 1402 Chapin St., Washington, D. C., but his permanent place of residence is Boston, Mass.]

Looms for Narrow Fabrics.

Editor Textile World:

I would like to have you furnish me with the address of agents in this country who handle English looms for narrow fabrics. We intend to make stay tape and shoe webbing, and want looms to weave up to ¾ inch, and carry 24 to 30 shuttles. J. L. L.

[We send the writer a copy of the Textile World, and will refer him to the advertising columns, where he will find the advertisements of the principal agents of English machinery. We have also written him more fully.]

Cotton Spinning in the South.

Editor Textile World:

I notice that there are a number of print cloth mills being erected in the South. Kindly indicate to me from your long experience in publishing textile news, whether the small number thus far erected is a new and advanced departure. I have been told that the dryness of the climate in causing the fibre of the cotton to become brittle and break in the loom has been one of the greatest obstacles in the manufacture of finer textiles in the South. Perhaps you can indicate to me what has been done to overcome this difficulty.

Mass. C. D. W.

[The erection of print cloth mills in the South is a progressive step in the manufacture of cotton in that section. There

is no reason why the manufacture of this style of fabrics should not be successful. In regard to the dryness of climate affecting the manufacture of the finer grades of cloth, we will say that there has been an impression for a long time that the spinning of fine yarns in the South was an impossibility, in competition with the natural advantages possessed by New England. This notion, however, is now being done away with, and with the artificial means of humidifying the air of the factory, there is no practical obstacle in the way for the spinning of as fine numbers in the Piedmont District of the South, as anywhere in the North. With the present devices, the condition of the atmosphere outside of the mill is now reckoned to be comparatively of little consequence.]

Bleaching Glove Leather.

Editor Textile World:

We have been referred to you for methods of bleaching glove leather, of which we are tanners. It is customary with us to bleach the skins by the action of the sun, the skins being hung out, or spread on the grass. We wish to find some way to do this work more quickly and more certainly, as we find it difficult to bleach at certain seasons. Our leather is tanned in oil, and when ready to bleach is from light straw to tan. Of course, by using artificial means, care will have to be used that no substance is used so strong as to destroy the leather.

New York. D. H. C.

[We are not familiar with the bleaching of leather, but it is barely possible that our correspondent can obtain the information by consulting the following works: "Tanning, Currying and Leather Dressing," by F. Dussance, Philadelphia, published in 1865; "Leather Manufacture," by J. S. Schultze, New York, published in 1876; "The Manufacture of Leather," by C. T. Davis, published in 1885; "Practical Handbook of Leather Manufacture," by Alexander Watts, London, published in 1890; "Leather Manufacture," by J. W. Stevens, London, published in 1891. We should also recommend our correspondent to write to Roessler & Hasslacher Chemical Co., 73 Pine St., New York, who may tell him what their peroxide of sodium will do for him, or furnish other information.]

Alpaca.

Editor Textile World:

Can you furnish me with the price that is being obtained for alpaca in foreign markets? R. & R.

[The latest quotation that we have, which prevailed in February, is 15 pence per pound.]

—Argentina exported 1,289,161 frozen wethers from Jan. 1st to Aug. 31st, 1896.

New Publications.

COLOR CARD of Leopold Cassella & Co., Frankfort-on-Maine, represented in the United States by William J. Matheson & Co., Ltd., New York. We are in receipt of a sample card issued by this house, containing specimens of wool colored with Anthracine Black L W and S T, and Anthracine Acid Brown R and B. We should advise dyers who are interested in browns and blacks on wool to send to the New York house for information concerning these dyes.

THE AMERICAN DROSOPHORE HUMIDIFIER is described in a small pamphlet recently issued by the American Drosophore Co., of Boston. This humidifier is well known to manufacturers, either by reputation or by practical use. Its merits are fully sustained by a number of testimonials that appear in the pamphlet.

FANCY SHADES ON COTTON SATEEN. Actien-Gesellschaft fur Analin-Fabrikation, Berlin, Germany, represented by the New York & Boston Dyewood Co., 55 Beekman St., New York, have issued a color card, showing fancy shades on cotton sateens dyed with substantive coloring matter; basic coloring matter and substantive coloring matters topped with basic colors.

APPLETON'S POPULAR SCIENCE MONTHLY for March has something for every reader who has any interest in science, and much for most readers. Prof. William Z. Ripley continues his series on "Racial Geography." It is illustrated with many typical heads. A contribution to the question of the harmfulness of alcohol is given by Prof. C. F. Hodge. In his "Principles of Taxation" series this month, Hon. David A. Wells gives six maxims which should control the levying of taxes under a free government. The "Confessions of a Normal-School Teacher," by M. H. Leonard, is a breezy comparison of the training for teaching afforded by the college and by the normal school. Surgeon-General Sternberg writes on "The Malarial Parasite and other Pathogenic Protozoa." Among the other articles are the following: "The Stability of Truth," "A Year of the X Rays," with sklagraphs and figures of apparatus; "The Blaschka Flower Models of the Harvard Museum," those famous creations in colored glass; "The Cliff-Dweller's Sandal," showing its relation to that of other peoples; "India Rubber and Gutta-percha." New York: D. Appleton & Company.

INDUSTRIAL LANCASHIRE, some manufacturing towns and their surroundings. By John Mortimer. Manchester, England: Palmer, Howe & Co., 8 vo., 158 pages, 70 illustrations; price $1.00. This is one of the annual publications reprinted from the "Diary and Buyers' Guide," issued by Henry Bannerman & Sons, Ltd., Manchester, England. The book has special regard to the textile manufactures of cotton and wool, and corelated industries. These annuals form some of the most delightful reading matter pertaining to textile manufacturing in England that is given to the public. The plan is excellent, and highly attractive. The present volume is, in some respects, more charming than its predecessors.

WOOL DYEING. By Walter M. Gardner, Philadelphia: E. A. Posselt, 2152 North 21st St.; 8 vo., 91 pages. Price $2. This is the second volume of Posselt's Textile Library, and is the first part of a work on wool dyeing, by the director of the chemistry and dyeing department of the Technical College at Bradford, England. It is fully illustrated. The present vol-

ume is an attempt to deal with the various subjects treated of, in a scientific manner; the theories which underlie different operations being explained so far as they are known. Equal prominence is, however, given to the more practical sides, working details of all important processes being attached. The information furnished can be relied upon as coming from the very best authority. To give an idea of the subjects treated, we may mention the following: Wool Scouring; Bleaching of Wool; Character and Impurities of Water; Mordants; Assistants, and other Chemicals.

Industrial Notes.

—The D'Este & Seeley Co. report among their recent sales five large, flanged, composition, pressure regulators to the Atlantic Works, Boston, for a steamer, to reduce 160 lbs. boiler pressure to 90 lbs., for general use in steering, hoisting, cooking, heating, electric light plant, etc. Also, several large regulators for use in the Paul Steam System of low pressure heating and drying. These regulators work on a vacuum of 2 to 12 inches. Also, seventeen large flanged regulators on an order from Copenhagen, Denmark. They have also quite recently furnished several large composition, flanged regulators for the steam yacht of Emperor of Russia.

—The work of installing the new picking machinery, revolving flat cards and drawing frames at the Mount Vernon Mills, Baltimore, is now well advanced. All of the machinery is being supplied by the Howard & Bullough American Machine Co., of Pawtucket, and large shipments are being made each week.

—The Shove Mills, of Fall River, Mass., have placed their entire order for revolving flat cards, electric stop motion drawing frames, and slubbing, intermediate and roving frames with the Howard & Bullough American Machine Co., of Pawtucket. The plans for the alterations and changes in this mill were made by W. T. Henry, of Fall River.

—The Lyman Mills, of Holyoke, Mass., have placed a repeat order with the Howard & Bullough American Machine Co., Pawtucket, for electric stop motion drawing frames.

—The Woonsocket Napping Machinery Co., of Woonsocket, R. I., announce that Mr. Maxim Lafontaine, who was for 12 years foreman, and for 6 years superintendent for the Parks & Woolson Machine Co., of Springfield, Vermont, has become a stockholder in the Woonsocket Co., and has been appointed superintendent and manager. They will add to their business a branch for preparing shears, and solicit that trade.

—The annual report of 1896 of the Boston Manufacturers' Mutual Fire Insurance Co. makes a good showing. The amount of insured risks December 31, 1896 was $2,360,000, more than at the same time in 1895. The losses incurred during 1896 were little over $55,000., and the dividends or premiums returned, amounted to over $560,000. The average rate of dividend for that year was 65.71%.

The policy of this company is to maintain a revenue from premiums four times or more the maximum single risk under one roof, to the end that even if through negligence or neglect in thoroughly protected risks a total loss shall occur, the impairment of revenue may not reduce dividends in any excessive measure.

—A bill has been recently introduced in the Massachusetts legislature for the regulation of the hours of Chinese labor in laundries, to the effect that no Chinaman shall be employed in any laundry establishment more than ten hours in one day. The only particular interest this has for our readers is in the disposition that pertaining to the employment of labor, is shown to legislate upon everything from the boot-black to the highest official in a manufacturing establishment.

—The Board of Government of the New England Cotton Manufacturers' Association have decided to have the annual meeting of the association held in Chapman Hall, Tremont Tempie Building on Wednesday and Thursday, April 28 and 29 next.

—President Arthur H. Lowe sailed for England February 27, but will return in time for the annual meeting of the New England Cotton Manufacturers' Association. During his absence his duties will be performed by Vice-president Fred C. McDuffie.

—C. P. Brooks, Director and Principal of the Lowell Textile School, Lowell, Mass., will deliver a lecture on "The Development of Textile Schools in Europe," before the Society of Arts, Boston, March 25.

—Articles of incorporation were filed February 18, with the Secretary of State, New Jersey, incorporating the United States Cotton Compress Company, with an authorized capital of $1,000,000 of which $800,000 is paid in. The company was formed for the purpose of manufacturing C. L. Besomette's patent process for baling cotton.

—The Alabama legislature has passed a bill to exempt from taxation cotton mills in the state, although with more opposition than had been looked for.

—A difference of opinion has arisen among the members of the Board of Directors of the Bourne Mills as to the policy to be pursued regarding the curtailment of production. Stephen A. Jenks of Pawtucket one of the directors, was unable to attend the last meeting of the board. At the meeting Directors Stevens, Shove, Chase and Horton were present. Messrs. Stevens and Shove advocated slowing down and argued that the expression of Mr. Jenks' views placed them in the majority. Messrs. Chase and Horton were opposed to curtailment, and the chairman ruled that Mr. Jenks' letter was not equivalent to a vote, and that the motion to adopt a short-hour schedule, which had been made, was lost. Mr. Stevens resigned as president and director of the corporation. Mr. Shove also withdrew as director. The resignations were not accepted.

—The Lombard Water Wheel Governor Co., of 59 Hampshire St., Boston, have closed a contract with the St. Anthony Falls Water Power Co., of Minneapolis, to furnish them seven governors for the new plant which they are now building. These seven governors are to regulate four water wheels each, or 28 water wheels in all, aggregating 10,000 horse power. The style of governor to be employed in this plant is designated by the manufacturers as Type C. During the past year the Lombard Co. have, with this type of governor, regulated over 40,000 horse power of water wheels in the United States. On account of the magni-

tude of the Minneapolis plant the question of governors was very carefully looked into before the above order was placed.

—The Border City Manufacturing Co., Fall River, has declared a quarterly dividend of 1%. Last dividend declared was 1½% in November, 1896. Company paid in dividends in 1896 6½%; in 1895 15½%; in 1894 7%; in 1893 12%. Par value of stock $100.

—The Troy Cotton & Woolen Manufacturing Co., Fall River, has passed its quarterly dividend. Last dividend declared was 4% in October, 1896. Dividends paid in 1896 20%. in 1895 28%; in 1894 17%; in 1893 26%. Par value of stock $500.

—The Clark Mile-End Spool Cotton Co. of East Newark, N. J., have placed their order for revolving flat cards with the Howard & Bullough American Machine Co. of Pawtucket, R.I.

—The Howard & Bullough American Machine Co. of Pawtucket, R. I., have made large shipments of cotton machinery to a number of southern mills which recently placed their order, with them, as the Enoree Mfg. Co., Enoree, S. C., and Mount Vernon Mills of Baltimore.

—There has been an exceptionally heavy movement of dry goods the past few weeks and some of the large New England mills have made large sales at a concession in price, but at no money loss.

—Marshall Field & Co., Chicago, direct their buyers to ship at once all goods on hand as the firm has to keep its store open extra hours to accommodate the trade and can use everything it has contracted for.

—Woolen mills have stocked up heavily with cheap raw material, and have a good opportunity to make money out of this in the near future.

—The South is fortunate in having as a section several very able business journals, which are devoted to the advantage and upbuilding of the Industrial South. The good that these trade papers have done cannot be over-estimated, and if at the same time they have reaped a substantial reward for themselves, no one can begrudge it to them, for it is well deserved. One of these publications, Dixie, is a most attractive typographical journal, and the recipient's attention is pleasantly invited to its contents by its appearance, and the inside does not belie the attractive looking outside. Its departments, each of which is devoted to one of the leading industries of the South, are in charge of specialists, who have something to say well worth reading in each month's issue. Dixie must help its advertisers, for we note it maintains its clientage with very little change, except the addition of new ones.

—The Moon Run Coal Company of Moon Run, Pa., is about to install an electric haulage plant in its colliery, and to this end has contracted with the General Electric Co. for electrical equipment, sufficient to operate a mine road with over 3½ miles of track. The generating station will consist of one 165 K. W. 250 volt generator directly connected to a Harrisburg Ideal Engine 13½" by 16" These with the switchboard will be set up in the present power house, which at present contains an air compressor plant for the operation of certain pick machines. The inside haulage will be handled by one ten ton mining locomotive, equipped with 40 H. P. motors. This will haul 40 loaded cars per trip, each loaded car weighing about two and a half tons. There will be over 3½ miles of trolley wire in the mine with the necessary feeders. It is worthy of note that eletricity was not adopted by the Moon Run Coal Co., before it had made a more careful investigation of the merits of all other systems of mechanical haulage, cable, compressed air and steam. The economical showing exemplified by the results obtained in the many other mines now using the General Electric Company's system of electric haulage, proved conclusively the advantage which would accrue to the Moon Run Colliery by the introduction of electricity.

—Michigan capitalists it is reported are planning to establish at Midland in that State an extensive plant for the manufacture of bleaching powder by a newly discovered process. At present the market is controlled by a British syndicate, and none is made in this country. The proposed plant is to cost $500,000, and the buildings will cover thirteen acres.

—The Dodge Needle Co., of Manchester, N. H., is a new establishment, having been in the needle business only about a year. They have run steadily all winter and are enlargeing their plant. They use special machinery of their own construction and are meeting with very good success.

—The La Capital Company, of Buenos Ayres, Argentine Republic, South America, have let contracts for the materials for a power station and the necessary equipment for the power in the station, and the road bed and cars to parties in the United States. The Berlin Iron Bridge Company, of East Berlin, Conn., have the contract for furnishing the skeleton steelwork of the building and the roofs. The roof over the engine and dynamo room will be covered with corrugated iron lined with the Berlin Company's fire-proof anti-condensation roof lining. Taking into consideration the magnitude of the work and the distance it is to be shipped, it is to be considered a good recommendation for the Berlin Company's roofing.

—The attendance at the Lowell Textile School keeps up well, every class being attended with great interest and the progress made is very satisfactory to both teachers and scholars. It has been decided to add a department in dyeing and bleaching to the curriculum of the School and operations have already been commenced upon the same, which will be completed by the opening of the Fall Term in October. It is intended to make this department complete in all its appointments, in line with the other departments of the school. A chemical laboratory is also to be added. The second of the free popular lectures will be given Wednesday Evening, March 17th, by W. D. Hartshorne, Esq., superintendent of the Arlington Mills, Lawrence, Mass., who will speak on "The Wool Fibre & Its Uses."

—Of the twenty million, or thereabouts, of South African sheep, the great proportion, probably nine-tenths, are of the merino breed.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Anniston. W. J. Stevens, president of the Afro-Alabama Cotton Mill Co., reports that he is having good success in selling the stock certificates, and that in all probability work on the erection of the new mill will soon be commenced.

—Alabama, Greenville. W. H. Parish, who operates a cedar factory at this place, is contemplating changing the same into a cotton mill, sometime this year. It is his intention to form a stock company to operate the mill.

—Alabama, Huntsville. We have a report that arrangements are being made for the erection of a cotton factory at Huntsville, on the co-operative plan; $50,000 will be the capital stock. The money will be subscribed by negroes, and none but colored people will be employed as operatives in the proposed mill. Booker T. Washington, of Tuskegee, has interested himself in the enterprise.

—Arkansas, Fort Smith. S. A Williams is interested in a project for the erection of a cotton mill at this place.

—*Georgia, Carrollton. $30,000 has been subscribed towards the fund that is being raised for the erection of the cotton mill that we reported would probably be built at this place. J. H. Barron and J. C. Manderville have interested themselves in the enterprise.

—Georgia, Cuthbert. A new cotton mill is being proposed for this place. H. Hord can probably give information.

—*Georgia, Elberton. Concerning the projected cotton mill for this place, that we reported Z. B. Rogers was interested in, that gentleman informs us that it has been decided to erect a $200,000 cotton mill, provided outside capital can be interested in the project. No material or machinery will be purchased until at least $100,000 has been raised. H. K. Gaudner is at the head of this project, and all communications relating to the same should be addressed to him.

—Georgia, Rome. A plan is being agitated for the erection of a co-operative cotton mill in Rome.

—Mexico, City of Mexico. A contract for erecting a large and thoroughly modern cotton factory in the State of Puebla has just been placed with Brooks & Doxey, of Manchester, England. The contract includes the construction of the edifice and the erection of an electric light plant.

—New Hampshire, Nashua. It is being talked that the Jackson Co.'s mill No. 3 will be rebuilt on a much larger scale than it is at present, and that other improvements will be made by that company.

—*North Carolina, Concord. The legislature has granted a charter to the Coleman Mfg. Co., of which Warren C. Coleman is the head. The company's capital stock will be $200,000, and will, as previously reported, be operated entirely by colored operatives.

—North Carolina, Eagle Springs. We have a report that R. Anglin is interested in a movement for the erection of a cotton mill at this place.

—*North Carolina, Fayetteville. 400 Whitin looms will be placed in the Holt-Morgan Cotton Manufacturing Company's new mills.

—North Carolina, Greenboro. The Hunter Manufacturing and Commission Company has been organized with a capital stock of $25,000; R. G. Vaughn president, C. G. Wright vice-president, and J. S. Hunter, secretary-treasurer. They will establish a plant to manufacture cotton specialties.

—*North Carolina, Taylorsville. On December 14, 1895, we reported that U. L. Alspaugh would build a cotton mill at Taylorsville. We now have the information that the mill has been completed.

—*South Carolina, Seneca. Work has been commenced on the new Schiemer Cotton Mill at Conneross Creek, four miles from Seneca. The mill will be 103 feet wide by 300 feet long, three stories high, and a basement; 20,000 spindles and 600 looms will be placed in the mill. Fine goods will be manufactured.

—*Texas, Dallas. We have investigated the report concerning a cotton mill projected for this place by the United Electric Security Company, of Boston, Mass., and find that W. H. McGrath, of Dallas, is in no way connected with the Boston Company, and that Allston Burr and not Winthrop Coffin is secretary and treasurer of the United Electric Security Company. The Boston Company neither deny or admit that they are interested in a cotton mill at Dallas.

—Texas, Waco. The Industrial Club has received a proposition for the establishing of a cotton mill at Waco.

Enlargements and Improvements.

—Connecticut, Bridgeport. The Salts Textile Mfg. Co. are going to build a weave shed, and their combing and spinning will be placed in the department now occupied in weaving.

—Georgia, Athens. At a meeting recently held by the stockholders of the Athens Manufacturing Company, it was decided to issue bonds to the amount of $100,000, which will be used for purchasing new machinery and making improvements in their mills. The company's present capital is $125,000, and its equipment consist of 10,000 spindles and 320 looms. R. L. Bloomfield is president, and G. H. Farmer, secretary.

—Georgia, Columbus. A despatch states that Judge Newman has granted an order permitting the receivers of the Eagle & Phenix Mills to make another outlay of $12,000 for new machinery and improvements.

—*Massachusetts, Fall River. In November last we investigated a report that the Shove Mills would build a new mill, and was officially informed that the report was

premature. We now have a report that they intend to erect a new weave shed, in which they will place 800 new looms, and that 16 pairs of mules will be thrown out to be replaced by ring spinning frames, and that new cards will also be installed.

—Massachusetts, New Bedford. A report states that the Whitman Mills will install considerable new machinery in the near future.

—Massachusetts, Webster. It is said that H. N. Slater intends to overhaul the machinery in the East Webster Cambric Mill sometime during the present year, and possibly build an addition thereto.

—*Massachusetts, Webster. The new weave room and addition at H. N Slater's Cotton Mill is approaching completion, and will be ready for the looms about May first. There will be 800 looms set up in the addition, some 700 of which are new, the balance being brought from the old mill, as the basement of the old mill will be used for spinning.

—Mississippi, Meridian. Messrs. Fearn Brothers, of Yazoo City, have leased the co-operative cotton mill, of Meridian, for a period of years, and have assumed control of the same, and it is said to be their intention to make some improvements in the plant.

—North Carolina, Henderson. We have a report that the Henderson Cotton Mill will increase its capital stock and also the output of the mill by the addition of new machinery.

—North Carolina, Lawndale. The Cleveland Cotton Mills Co. may add machinery for bleaching a portion of their product.

—South Carolina, Pelzer. Seven new boilers are to be placed in the plant of the Pelzer Manufacturing Company.

Mills Starting Up.

—Massachusetts, Fall River. The Robeson Mill Co. has resumed operations in their mill.

—Massachusetts, Waltham. The Boston Mfg. Co. has resumed operations, with nearly a full complement of hands.

—New York, Valatie. Wild's cotton mill resumed operations about March 1st. It has not been in operation for about a year.

—*Pennsylvania, Philadelphia. The Philadelphia Linen Company, corner American and Diamond Sts., has begun operations. We published full particulars concerning this company in our issue of January 2, 1897.

—*Rhode Island, Centreville. The weaving of cloth has commenced in the new Warwick Mill.

—Rhode Island, Pawtucket. The Green & Daniels Yarn Mill, at Central Falls, began a 60-hours-a-week schedule, March 2nd, after being on a 40-hour schedule since last summer.

Woolen.

New Mills

—Kentucky, Bowling Green. The Commercial Club is said to have under consideration a proposition from a Massachusetts manufacturer to establish a carpet factory in Bowling Green.

—*Minnesota, Rochester. The Rochester Woolen Mill Co., of which we have several times made mention during the past two months, has filed articles of incorporation. The company is composed of John A. Cole, C. F. Massey, J. T. Collin, and C. P. Booth, all of this city. The capital stock is $20,000. They will manufacture flannels, blankets and cloths.

—*New York, Amsterdam. A dispatch states that the shoddy mill of Becker and Nolan that was burned last week, will be rebuilt at once. They will probably buy new machinery.

—*Oregon, Union. The Union Woolen Mill Company has filed articles of incorporation. This is the company we reported making preparations for organizing in January, 1897. They propose to manufacture woolen yarns and cloth. The capital stock is fixed at $20,000, J. H. Hutchinson, A. E. Eaton, W. R. Hutchinson, N. Tartar, Samuel Truesdale, H. C. Susewind and J. M. Carroll are the organizers.

—Pennsylvania, Philadelphia. Charles Thomason will establish a worsted combing plant in Philadelphia, to contain two combs and a full complement of carding machinery.

—Rhode Island, Burrillville. Keyes G. Brown, the owner of the four-set woolen mill at Mohegan, a suburb of Burrillville, which was destroyed by fire several years ago, is building a new plant on the site of the old mill. The weave shop, which is nearly completed, is one story high. The main mill is to be two stories high. The mill, when completed, will give employment to about 100 hands.

—Rhode Island, Thornton. We learn that the foundation has been laid for the new mill that is to be erected here by Charles T. Fletcher, president of the Providence Worsted Mills, and the work of raising the walls will be started very soon. The mill will probably be about 50x160 feet.

—Tennessee, Elizabethton. It is reported that C. P. Cass, of this place, is contemplating the establishment of a one-set woolen mill.

Enlargements and Improvements.

—Maine, Corinna. Charles A. Greenwood is making some improvements in his woolen mill and adding some new machinery, such as jacks, looms, etc.

—Massachusetts, Fitchburg. The Star Worsted Co., of Fitchburg, is said to be making arrangements for the building of an addition of 50x70 feet to their plant, and that a new 350 h.p. engine will be placed.

—New Hampshire, Ashland. Hart, McArthur & Hart are installing a new electric light plant and a new steam boiler. They will commence operations very soon.

—West Virginia, Bloomary. L. Smith McBee advises us that he may increase the size of his woolen mill sometime during the coming season.

Mills Starting Up.

—California, Santa Rosa. The Santa Rosa Woolen Mills are to be re-opened about the first of May, and we are informed that the mills have been sold to W. B. Humbert of Ashland, Ore., concerning whom we have had several reports, to the effect that he was negotiating for a location for a new mill at Santa Cruz, California.

—Connecticut, Glenville. The Hawthorne Mills Company have commenced operations on full time, and with a full complement of operatives. They have not been running full time during the past three years.

—Connecticut, Rockville. The carding and spinning rooms of the American Mills Com-

pany are running on full time, and it is expected that the weaving and other departments will soon be fully employed.

—Connecticut, Winnipauk. Work has been resumed in the dyeing department of the Norwalk Mills, and the remainder of the mills will soon be in operation.

—Connecticut, Winsted. The Winsted Yarn Company's Mill, which has been running on short time for several months, is now being run on full time.

—Maine, Pittsfield. The Dennison-Walker Woolen Mill has been started up on full time. J. B. Lorge, with William Iselin & Co., N. Y., is the selling agent.

—Maine, Skowhegan. Lewis Anderson and Company are running their woolen mill on full time.

—Massachusetts, Medway. A report states that Cole, Senior & Co. has commenced operations at the Sanford Mill.

—Massachusetts, Milbury. Edwin Hoyle & Son have resumed operations on full time at the Ramshorn Woolen Mill.

—New York, Cohoes. The Egberts Woolen Mill was started up on full time on Monday, March 8. This mill has not been run since last December, and will be started up under a new management, John Donahue, secretary, having retired from the firm. The mills will be operated by Messrs. M. B. Smith, Jr., and Jacob Leversee, who are at present treasurer and president of the Egbert Company.

—New York, Fort Hunter. The Victor Rug Company, formerly of Amsterdam, but now located in this place, is making preparations for starting their mill, which has been closed for several weeks.

—Pennsylvania, Philadelphia. Hey & Son have started up their Progress mill.

—Rhode Island, Burrillville. The woolen mill formerly operated by J. D. Nicholls & Sons, has been purchased by a Mr. Wilcox of Pascoag, R. I. The mill has been idle for more than a year and a half. When in operation, this mill gives employment to 100 hands and upwards.

—Rhode Island, Pascoag. The Sheffield Woolen Mill has been started up by John T. Fisk. About 100 hands will be put to work at once. This number will gradually be increased until the mill is fully operated. About 250 hands are usually employed in this mill.

—Rhode Island, Potter Hill. Part of the machinery at J. B. Campbell & Company's Mill has been started up.

—Rhode Island, Providence. Operations have been resumed in full at the Weybosset Mills.

—Rhode Island, Washington. The Washington mill is said to have been leased by East Greenwich parties, who will put in new machinery for the production of woolen goods. This mill has been idle for a long time.

Knit.

New Mills.

—Connecticut, Newington. We have a report that John Chapman is at the head of the Knitting Mill company that we reported being organized here in December last.

—*Georgia, Union Point. Information reaches us that the Union Point Knitting Mill has been incorporated with a capital stock of $100,000. E. Nicholson is president. This is the company that we reported rebuilding their new mill that was burned last season, the mill will be pushed to completion as rapidly as possible.

—New Hampshire, Concord. Jacob May, who formerly conducted a clothing establishment in this place, is making preparations to establish a hosiery mill in the State of Tennessee.

—*New Jersey, Glassboro. John L. Johnson, late superintendent of the Union Manufacturing Company at Frederick, Md., will, in company with W. O. McCutcheon and Joseph S. McCutcheon, begin the manufacture of seamless half hose. They will equip their mill with all the latest improved machinery, to manufacture fine grades of seamless hosiery and plain and fancy mixtures. We made mention of this plant Jan. 9, 1897.

—New York, Fort Edward. It is said that Fort Edward is to have a new industry in the shape of a knitting mill, which will be operated by the Imperial Mfg. Co., of Ilion, N. Y. The citizens will furnish a plant and other privileges, and give the use of the same to the company for ten years.

—New York, Oriskany. Thomas F. Walbran, whose hosiery plant was destroyed by fire in September last, writes us that it is his intention to rebuild the plant some time this year.

—North Carolina, Greensboro. The George Manufacturing Company has been organized here for the purpose of establishing a knitting mill for manufacturing hosiery. They have secured a site at Fishing Mills, near Goldsboro. The mill will be run by water. S. G. George is president and Edgar George secretary-treasurer. They will begin work on the mill at once. We had a report in December last that these people contemplated erecting a plant at Chattanooga, Tenn. We understand that the plant at Greensboro is the only one they will start at present.

—Pennsylvania, Alburtis. A despatch states that C. P. Trexler & Co. will start a hosiery mill at this place that will give employment to 50 people.

—Pennsylvania, Pittsburg. Black & Gloninger have leased their store house at No. 444 Sixth Ave., to the Schwartz Hosiery Co., who will take possession at once.

—Pennsylvania, Perkasie. The Board of Trade is now in correspondence with a Philadelphia company concerning the locating of a hosiery factory in this borough.

—Pennsylvania, Sellersville. The Board of Trade are corresponding with Philadelphia parties who desire to locate a hosiery plant here.

—South Carolina, Beaufort. The Beaufort Knitting Mill Company that we recently reported had applied for a charter at Columbia, S. C., write us that they have rented a mill in which they expect to begin the manufacture of goods in about sixty days. R. A. Long and George Holmes are the names of the persons who will operate the plant. They will manufacture hosiery. 40 knitting machines will be operated at the start. Steam is the motive power.

—*South Carolina, Bishopville. Concern the contemplated knitting mill for this place that we recently reported, with William M. Reid at the head, that gentleman now writes us that if success attends their efforts they will erect a plant to contain 25 knitting machines.

—*Virginia, Emporia. Samuel Goodwyn is said to be interested in the new knitting mill that we have previously reported was projected for this place.

Enlargements and Improvements.

—*South Carolina, Manning. According to a report the Manning Knitting Mills, of which Scott Harvin is the owner, will be enlarged to double its present capacity. This is the new mill concerning which we have previously made mention.

—Tennessee, Knoxville. The stockholders of the Knoxville Knitting Mill have decided on doubling the capacity of their plant, and arrangements for that purpose are now being made.

Mills Starting Up.

—Connecticut, Norfork. The Norfork & New Brunswick Hosiery Company, whose mills have been idle for several months, has resumed operations on full time.

—New York, Cohoes. The rib knitting frames in the mill of the Cohoes knitting Co. have been started, and it is expected that the mill will be in full operation soon.

—New York, Cohoes. Tivoli Mills in this city has been started up. These mills have been closed down since last Christmas. For the present they will be run two-thirds time. The old scale of wages paid at the time the mills closed down will continue in effect.

—*New York, Lansingburgh. The knitting mill of John T. Meeker has been started up.

—New York, Stockport. The L. J. Rossman Company has resumed operation after a shut down of several months.

—Rhode Island, Woonsocket. The Glenark Knitting Company's mill has started up on full time.

—Vermont, Bennington. H. E. Bradford & Co.'s knitting mill that closed down in October last, has resumed operations.

Silk.

New Mills.

—Connecticut, Middletown. It is now considered quite probable that this city will soon have another industry. J. R. Frame of the Vega Silk Co., of Paterson, N. J. is now negotiating with a committee of the board of Trade here concerning the removal of his factory to this city. It is the intention to locate the new factory off Spring St., to contain at the start 100 looms, for manufacturing silks from French patterns.

—*Connecticut, Norwalk. The Norwalk Silk Mill Co., whose machinery was purchased at a foreclosure sale, Feb. 16, 1897, by Rudolph Cohen, of New York City, has been succeeded by the American Ribbon Company, and operations have once more been resumed in the mill. Three looms are now in operation and fifteen hands are being employed. It is the intention of the company to employ a hundred hands, or upwards, as soon as the machinery can be made ready for them.

—*Pennsylvania, Feetwood. The Pensylvania Silk Co.'s new mill at this place, has commenced operations. This is the mill for which ground was broken on Nov. 25, 1896. The mill contains 12 000 feet of floor space, and is equipped with the most modern improved machinery for the manufacture of plain and fancy dress silks.

—Pennsylvania, Marietta. A dispatch states that a contract for the lease, equipment and operation of a new silk mill to be built in this place, has just been closed with the Ashley & Bailey Company that now operates mills at Paterson, N. J., and Columbia, Pa. The new mill will be 160x40 feet, with a wing 60 feet square. Both buildings will be three stories high and will contain 30.000 square feet of floor space, and will give employment to about 200 hands. This mill should not be confounded with the one referred to in the Textile Advance News of February 27, 1897.

—*Pennsylvania, Marietta. We have received further information concerning the movement for locating a silk mill in this borough. H. M. Alexander, chairman of the Industrial Committee of Marietta, writes us that they are about to close with a party from Paterson, N. J., who expect to move their entire plant to Marietta, but that they do not feel at liberty, at the present time, to give either name or facts, more than it will be an enlarged mill, now containing 100 looms, that will be removed from Paterson.

—Pennsylvania, Wilkes-Barre. A proposition for the erection of a large silk mill in Wilkes-Barre has been laid before the executive committee of the Board of Trade. The promotors of the enterprise are John J. Ruegg, president of the Golden Rod Silk Co., of Paterson, N. J. and Walter H. Graef & Co., commission merchants of New York City. The scheme is to organize a stock company of $200,000 capital. The promotors will subscribe $50,000 in cash. $150,000 will be invested in the mill and equipment and $50,000 reserved for a working capital. The mill is to be 255 feet front by 46 feet wide, three stories high and equipped with 600 looms. A committee has been appointed to solicit subscriptions for the new project. We reported in the Textile *Advance News* of Jan. 30th that the Golden Rod Silk Co. contemplated building a mill at Bangor, Penn., we understand that the project will be dropped provided the one at the latter place is a success.

Enlargements and Improvements.

—Connecticut, Danbury. Ground has been broken for the foundation of a two-story addition to A. E. Tweedy's Silk Works, on East Franklin St. The building will be a frame structure 30x50 feet.

—Pennsylvania, Lancaster. The proprietor of the Columbia Silk Mill, which at present employs 700 hands, has given notice that more hands will be employed and that in the spring an addition will be made to the mill when their working force will be increased to 1000.

Mills Starting Up.

—Connecticut, Willimantic. The necessary permission having been granted by trustee E. A. Buck, the Turner Silk Mill is being started up, and will continue in operation until the litigation involving the ownership of the plant is terminated, which will probably be in May. The mill has been shut up for nearly a year.

—Connecticut, South Coventry. Work has been resumed at Washburn's silk mill.

—New York, Hornellsville. The Rockland Silk Mill has been started up.

Miscellaneous.

Enlargements and Improvements.

—North Carolina, Haw River. The Glenark Manufacturing Company is laying a foundation on which to erect a dye-house.

Mills Starting Up.

—Massachusetts, Canton. The Lexington Print Works, which has been idle for some time, has resumed operations.

—*Massachusetts, North Oxford. Degnan's dyeing plant, concerning which we published full particulars in September last, has commenced operations.

—Rhode Island, Providence. The Silver Springs Bleachery began running on full time March 1st. For the past eight months the plant has been running but eight hours a day.

Fires.

—Georgia, Bowman. W. M. Denny's Woolen Mill was destroyed by fire March 1st, 1897.

—Georgia, Griffin. A small amount of damage was recently caused by fire in the picker room of the Griffin Mfg. Co.

—Massachusetts, Dodgeville. Messrs. B. B. & R. Knight's cotton mill recently sustained a slight damage from fire.

—New York, Amsterdam. The Pioneer Knitting Mill, occupied by Chase Brothers as a mitten factory, has been damaged by fire to the amount of about $30,000. The loss was fully covered by insurance.

—New York, Mechanicville. The Mechanicville Knitting Mill has sustained a loss by fire that will amount to $5000 or more. The fire originated in the mixing picker. The loss is fully covered by insurance.

—Pennsylvania, Philadelphia. Samuel Lee & Sons Silk Finishing Works, at 1144 St. John St., has been damaged by fire to the extent of $2000, supposed to have been caused by spontaneous combustion.

—Pennsylvania, Philadelphia. John Dooks' Sons, dyers, have sustained a loss by fire of $13,000.

—West Virginia, Charlestown. The brick woolen mill of Henry A. Lockhart, known as the Porter factory, and situated about four miles from this place, has been entirely destroyed by fire. The origin of the fire is supposed to have been the work of tramps. The mill has been idle for some time.

Failures and Suspensions.

—New York, New York. Abraham Lincoln Roth, importer and jobber of hosiery and underwear at 49 Lispenard St., has made an assignment to Henry Hafer.

—Pennsylvania, Bloomsburg. The Bloomsburg Carpet Works, Magee Carpet Works, all owned by the same persons, have failed. Their liabilities are said to be $100,000; assets not stated.

Facts and Gossip.

—Alabama, Montgomery. We learn that the legislature has passed the bill exempting cotton factories hereafter to be built in Alabama, from taxation, for ten years.

—Alabama, Troy. Hildebrant Brothers, of Cohoes, N. Y., write us that the report that they contemplate building a knitting mill at Troy, Alabama, is erroneous.

—*California, Ukiah. Concerning the report that a woolen mill would be erected in this place, we are now informed by Messrs. Smith & Donohue, that the project has failed to materialize, and that there are no prospects of anything further being done in the matter for the present.

—Canada, Montreal. We learn that the Globe Woolen Mills Co., Ltd., has decided to wind up and dissolve the company. It will be remembered that about three months ago this concern suspended payment, and endeavored to effect a settlement with its creditors at 50 cents on the dollar. It has not yet been decided what will eventually be done with the property.

—Connecticut, New Haven. The commissioners on the insolvent estate of the Beach Warp Co. have filed their report in the probate court, which is to the effect that they allowed $6,677.09 of general claims, and $141.12 of preferred claims, amounting in all to $6,818.21.

—Iowa, Keokuk. C. H. Emerson, manufacturer of hosiery, leggins and mittens, at Keokuk, has retired from business, and his outfit, consisting of 5 knitting machines and other necessary machinery, is for sale.

—Kansas, Peabody. A bill will soon come before the senate for abolishing of the silk station at Peabody. An effort will be made to have the U. S. Government take charge of the station, and operate it, and unless this is done, the bill provides for the sale of the property.

—Kentucky, Danville. A company with a capital stock of $30,000, to be known as the Cogar Hemp Company, has been chartered by George Cogar, of Danville, and E. R. Spark, of Nicholasville, who propose to buy and hackle hemp for the use of rope and twine manufacturing.

—Maryland, Ellicott City. A report reaches us that a trust deed has been filed at Ellicott City, conveying to Messrs. Reverdy Johnson and John L. Donaldson, executors of Miss Martha E. Gray, late of Baltimore, the mill property of the Gray Mfg. Co., one mile from this place.

—Massachusetts, Lowell. The Faulkner Mills have been incorporated, with a capital of $200,000. Frederick Faulkner is president and John A. Faulkner treasurer.

—Massachusetts, Millbury. The dye works formerly conducted by Whitney & Molt, whom we recently reported had been petitioned into insolvency, are, as a consequence, to be discontinued, and A. C. Herman and W. Molt, who have been connected with the dye works for several years, propose, it is said, to form a new company under the name of Molt Bros., and that the indigo dye, which the late G. Molt invented, will be manufactured by the new firm. It is thought probable that the new firm will locate in Worcester.

—Massachusetts, New Bedford. Some progress is reported to have been made in the arrangements for the establishing of the textile school, of which W. J. Kent, agent of the Wamsutta Mills is a chief promoter.

—Massachusetts, Pittsfield. There is a report here that Messrs. Kernan and McGlennon are negotiating for a lease of the idle Pomeroy Mills, with a view to early starting them up.

—Massachusetts, Pittsfield. On investigation we learn that Messrs. Arnold and McKennon of Stafford Springs, Conn., are the parties who will operate the card clothing establishment at Pittsfield, reference to which was made in our last issue of the Textile Advance News. The necessary machinery has been purchased in England whither Messrs. Arnold and McKennon have been for that purpose.

—Massachusetts, Shelburne Falls. A portion of the property of the Mayhew & Wilkins Silk Company has been sold under a foreclosure. There is a confliction of reports as to who the parties are that have purchased the property. One report has it that

George W. Halligan, president of the Board of Trade, at Shelburne Falls, is the purchaser. Report No. 2 states that F. H. Mayhew, of Wortendyke, N. J., is the party to whom the property was sold.

—Massachusetts, Spencer. We are informed that the Massasoit Knitting Mill Co. will change its machinery in order that a different line of goods than those they now make may be manufactured.

—*New Hampshire, Hillsboro Bridge. The project for the forming of a stock company for the purpose of erecting a knitting mill is, for the present, laid on the shelf.

—New Jersey, Hackettstown. Ashley & Shaw Silk Co. have filed articles of incorporation. The company has a capital stock of $50,000, $1000 of which is paid in. The incorporators are William H. Ashley, John Shaw, and Lewis Corcoran, all of Hackettstown. They weave and dye silk goods.

—*New Jersey, Oxford. The stockholders of the Oxford Dyeing & Printing Co., that we previously reported had filed their papers at Paterson, this state, have elected the following officers: James Bennett, president; Daniel Forest, vice-presieent; G. Cole Bennett, secretary and treasurer.

—New Jersey, Paterson. A new company, to be known as the Griffon Company, has been organized here by Ernest F. Graff and others. They will manufacture fine wool and worsted goods.

—New Jersey, Paterson. Fairhurst & Co., manufacturers of silk ties, handerchiefs, etc., at Dale Avenue and Grand Street, are moving into their new mill at Nos. 535 and 537 East 18th Street, where they will operate sixty 4x4 box looms with fancy motion.

—New Jersey, Stanwick. Norman R. Grey has been named as receiver for Law & Ripple, the firm that operate the Stanwick Carpet Mills at this place, and the same that we recently reported had been petitioned into insolvency, owing to a disagreement of the partners over the management of the concern, and not to any financial embarassment, as the company is said to be perfectly solvent.

—New York, Amsterdam. The Chase Brothers, whose mitten factory, in the Pioneer Mill, was badly damaged by fire on February 27 (see under Fires, this issue), are said to be negotiating a lease of a portion of the No. 1 mill of Warner D. Forest & Company, now owned and occupied by Becker, Lindsay & Nolan.

—New York, Brooklyn. The firm name of F. H. Plate & Co., that operates the Prospect Knitting Mills, has been changed to Plate & Clark.

—New York, Cohoes. A correspondent writes us that John Scott, who was formerly interested in the Enterprise Mill that was sold in October last to Peter McCarthy of Troy, N. Y., is making preparations to again engage in the knit goods business at the Argyle Mill in Cohoes.

—New York, Cohoes. Charles Fountain and others are said to be making arrangements for starting a factory for the manufacture of knit goods.

—New York, Cohoes. We are informed that the strike at the Victor Knitting Mills, which has been on since the 1st of November last, has been compromised. The employees have returned to work at one-half the reductions originally proposed by the owners.

—New York, Hagaman's Mills. All of the real estate, buildings, machinery, etc., of the Anchor Knitting Mill, formerly owned and operated by William M. Pawling, will be offered for sale under foreclosure made in in Feb. last, on April 3rd, 1897.

—New York, Mechanicville. John Donahue has retired from the Tenendaho Knitting Company, in which he has been associated with M. B. Smith, of the Egbert Company, of Cohoes. This mill will now be operated by Messrs. Smith and Leversee.

—New York, New York City. Abram Steinhardt, manufacturer of cords, tassels, etc., has given bill of sale for $5245.

—New York, New York. The Collins Jute Company, that we recently reported incorporated with a capital stock of $25,000, is located at 197 West Street. J. R. Collins is president and treasurer, and W. J. Haring, superintendent. They manufacture jute bags of every description, and succeed to the business of J. R. Collins.

—New York, Sandusky. We have a report that the machinery has been removed from Theo. Hayden's woolen mill, and that it is now being installed in the prison at Auburn, where it will be used for weaving the cloth for the convicts.

—New York, St. Johnsville. It is said that the proprietors of the Lion Knitting Mill are negotiating for a dissolution of the copartnership. It is also said that their mill, now idle, will soon be re-opened.

—*New York, Stillwater. The new machinery for the manufacturing of pulsh knit goods in Denison & Co.'s mill, has arrived.

—New York, Watertown. We are informed that the project for a new silk mill in this place bids fair to be abandoned for the present.

—*North Carolina, Charleston. The Charleston Cotton Mill was sold at public auction Feb. 1sth, and was bid in by C. O. Witte, representing the bondholders, for $50,000. There were no other bids for the mill. The remainder of the property, including machinery, etc., was purchased by M. F. Kennedy, agent for the mortgagee, for $29,000. The sale was made in order to have a satisfactory settlement with all parties concerned, and it is expected that a reorganization will soon be effected, and the mill once more put in operation.

—North Carolina, Concord. H. N. Randall, a hosiery manfacturer of South Woodstock, Conn., is in this city, and it is said that he is negotiating for the removal of his plant to concord. He has not operated his plant at South Woodstock, for some time.

—North Carolina, Graychapel. A. G. Hough is starting the knitting business with two knitting machines and one looper, which for the present will be operated by horse power.

—*North Carolina, Grover, D. R. Bird, who we reported contemplated building a knitting mill in this place informs us that he has decided not to do so.

—North Carolina, Huntersville. The Virgin Cotton Mill has been sold to satisfy a judgment, to Hariot, Clarkson for $4500.

—Ohio, Cincinnati. The property and business of Pearce, Atkins & Co. and Henry Pearce's Sons, concerning whose failure we gave a complete account in September last, is being advertised for sale by the assignee, Wm. C. Cochran.

—Pennsylvania, Clifton Heights. John Delahunty has been appointed receiver for William Campbell & Company, whose mill is located in this place. This is in consequence of the decision of Judge Beach, setting aside the assignment made by this firm in December, 1895, to William M. House.

—Pennsylvania, East Stroudsburg. In regard to the report that the knitting mill formerly operated by Muehling & Johnson being utilized by another concern for the manufacture of fine spool silk, Messrs. Muehling & Johnson inform us that there are several parties negotiating for the mills, which are now vacant, but as yet no agreement has been arrived at with any of them.

—Pennsylvania, Hollidaysburg. Libby & Co., who operate the Enterprise Hosiery Mill, at this place, in the manufacture of men's seamless cotton half hose and children's ribbed hose, inform us that owing to the unprofitable condition of the hosiery trade, they are now closing out their business.

—Pennsylvania, Millville. We are advised that Edward Thorp, who has been connected with the Tingue Mfg. Co., at Seymour, Conn., for several years, has leased a woolen factory at Millville, in which he will manufacture woolen yarns.

—Pennsylvania, Philadelphia. The partnerships under the firm name of John Bromley & Son, Bromley Manufacturing Company and Lehigh Manufacturing Company, have been dissolved. Business will be continued by John H. Bromley and Edward Bromley, under the name of John Bromley & Sons, at Front, York and Jasper Streets and Lehigh Ave., and also as the Bromley Manufacturing Company, at Lehigh Ave., in which business William H. Bromley has an interest. Joseph H. Bromley will continue under his own name and that of the Lehigh Manufacturing Company, at Fourth Street and Lehigh Ave.

—Pennsylvania, Phœnixville. The hosiery plant formerly occupied by Byrne, Parsons & Co. will be continued in operation by a brother of Mr. Parsons, of Byrne, Parsons & Co.

—Pennsylvania, Scranton. Execution has been issued against the Scranton Lace Curtain Mfg. Co., at the instance of Creighton & Birch of New York City, for $75,000. The execution was issued on a judgment bond given by the company last July, and was for money loaned, which was to be paid in goods.

—Pennsylvania, Stanwick. On the application of counsel, a bill has been granted to show cause why a receiver should not be appointed for Law & Ripple, carpet manufacturers. The bill is returnable on Feb. 24th. The application for the receivership, it is said, is made owing to the disagreement of the partners over the management of the concern. The plant is considered worth about $35,000, and the liabilities do not exceed $10,000, and the concern is perfectly solvent.

—Pennsylvania, Upland. Joseph Greer, of Philadelphia, Pa., denies the report that he is the party that is negotiating for the lease of J. P. Crozer's Sons' No. 3 Mill, at Upland.

—Rhode Island, Burrillville. Concerning the report that the mill of J. G. Nichols & Son had been leased to Dr. Robert Wilcox and Albert Wells, of Pascoag, we are now informed that these gentlemen have taken possession of the mill, which they will operate under the firm name of The Oak Valley Woolen Company.

—Rhode Island, Newport. The Narragansett Web Co., of which we have previously made mention, has succeeded the Thurlow-Burnham Co., manufacturers of suspender webs. They have also purchased the plant of the old Goodrich Co. The company has a capital of $90,000. Henry C. Stevens is president of the new company, Henry Bull, Jr., vice-president, Clarance A. Hammett, treasurer, G. Edwin Sawyer, secretary and G. M. Thurlow, general manager. They have 100 looms and 600 braiders. Their New York office is at 55 White St.

—South Carolina, Yorkville. The new Yorkville Cotton Mill Co. has been incorporated with a capital stock of $75,000.

PERSONAL RECORD.

Cotton.

T. J. Kearsey has been selected as superintendent of the new Efird Cotton Mills, at Albermarle, N. C.

Daniel J. Carey, who has for some time been employed in the position of second hand in the dyeing department of the Whittenton Mills, has resigned his position there, in order to accept the position of overseer of dyeing in the Manville (R. I.) Mills.

Mr. Moore, secretary of the Fort Mill, (S. C.) Cotton Mfg. Co., has resigned.

E. J. Partington, overseer dyeing at the Lowell Bleachery, Lowell, Mass., has severed his connections with that company and has accepted a position with a Providence, R. I. concern.

S. R. Kennett is in charge of the weaving department in the new mill of the Granby Cotton Manufacturing Company, at Granby, Georgia.

E. G. Barnes is overseer of spinning for the Granby, Ga., Cotton Mfg. Co.

W. P. Campbell has accepted a position with the Granby Cotton Mfg. Co., Granby, Ga., for whom he will have charge of carding.

W. F. Green is now with the Granby (Ga.) Cotton Mfg. Co., as overseer of the cloth hall.

Henry Seamens is overseer of frame spinning in the Ray Cotton Co.'s mill at Woonsocket, Rhode Island.

A. M. Hartwell, formerly at Lewiston, Maine, is now overseer of weaving with the Dwight Mfg. Co., Chicopee, Mass.

M. O. Alexander, has resigned the position of overseer of carding for the Union Cotton Mills, at La Fayette, Ga., and has gone to Anderson, S. C.

James Ezell, has been secured to overseer the spinning in the Burlington (N. C.) Cotton Mills, for several years past he has been with the Oneida Cotton Mills, at Graham, N. C.

Albert Garside has resigned the position of watchman for the Cocheco Mills, at Dover, N. H.

Geo. Hillsley, superintendent of the Arlington Mills, at Wilmington, Del. has resigned after having filled that position for twelve years.

William A. Perry has accepted a position as overseer of carding for the Grant Yarn Company, who operates a 30,000 spindle mill on fine numbers, at Fitchburg, Mass.; previous to accepting this position Mr. Perry was for a long time with the Merrick Thread Co., Holyoke, Mass., where he held a position similar to his present one.

R. A. Wilson is the new superintendent of the cotton mills at Concord, N .C.

William H. Brocklehurst is now in charge of the weaving at the new Corr Mill, at Taunton, Mass. He formerly held a similar position in the Borden Mill, at Fall River, Mass.

J. W. Byerly, formerly with the Franklinville (N. C.) Mfg. Co. is now at Durham, N. C.

Maurice Rose has resigned his position as section hand in Whittenton Mills, Taunton, Mass., and has gone to New York.

Jos. Plant is now holding a position as 2d hand of spinning in Manchaug Mill No. 2, at Manchaug, Mass.

Wilfred Marks, second hand of spinning in the Manchaug (Mass.) Mills has resigned.

Robert James, second hand at the Henrietta (N. C.) Cotton Mill has resigned.

Jos. Teal is second hand in the frame spinning department at the Warwick Mill, Centreville, R. I.; for two years past he has been setting up machinery for Fales & Jenks, of Pawtucket, R. I.

Chas. M. Sears has resigned his position with the Dwight Manufacturing Company at Chicopee, Mass., where he has had charge of the carding in Nos. 1 and 3 mills during the past two years.

Andrew Bryson, of Williamstown, Mass., has been engaged to take charge of the dyeing for the Johnson Mfg. Co., of No. Adams, Mass.

Thos. W. Harvey, formerly with the Gibsonville (N. C.) Cotton Mills, is now overseer of carding in the Oneida Cotton Mill at Graham, N. C.

R. R. Moore is now in charge of the beaming at the Aurora Mills, Burlington, N. C.

J. C. Griffin is now section hand in the weave room at the Granite Mills, Haw River, N. C. He was recently with the Carleigh Mills, of Raleigh, N. C.

O. H. Farr, formerly overseer of carding and spinning at Rosswell, Ga., is now at Lockhart, S. C.

W. T. Landon, formerly with the Dwight Mills, at Gadsden, Alabama, is now second hand for overseer Benjamine Hicks, at the Union (S. C.) Cotton Mills.

G. T. King is now master mechanic at the Enterprise Mills, at Kings Mountain, N. C. He was recently at Henrietta, N. C.

Edward Farrell, overseer of carding at the Shove Mills, Fall River, Mass. He was recently with the Sagamore Mills, of the same place, where he held a similar position.

A. L. Tolman, formerly overseer of weaving at Rays Cotton Mill, Woonsocket, R. I. is now in a similar position with the Thorndike (Mass,) Cotton Mills Co.

Chas. F. Smith, of Hartford is now with the Frank Wilkinson Mfg. Co., Tarriffville Conn.

James E. Ezell is now in charge of the spinning at the Glencoe Cotton Mills, of Burlington, N. C.

W. J. Hodfield, of Turners Falls, Mass., has accepted a position with the Dwight Company, at Chicopee, Mass., where he will have charge of the carding in No. 1 and 3 mills.

Joseph Platt has accepted a position as second hand in the spinning departments of the Manchaug (Mass) Cotton Mill.

John M. Kimball has resigned the position of treasurer and agent of the W. A. Slater Cotton Mills, Jewett City, Conn.

William P. Holt has been appointed agent of the W. A. Slater Cotton Mills, Jewett City, Conn.

Charles D. Trumbull has been appointed treasurer of the W. A. Slater Cotton Mills, Jewett City, Conn.

Merrill Gleason has accepted the position of overseer of weaving with the Ray Cotton Mills, at Woonsocket, R. I. He was formerly with the Valley Falls (R. I.) Company.

W. T. Talley has accepted a position with the Cabarrus Cotton Company at Concord, N. C., where he will have charge of a section in the weaving department.

E. D. Underwood has been promoted to the position of section hand in the weaving department at the Cabarrus Cotton Company's mill at Concord, N. C.

Ernest E. Shetters second hand of weaving in the Tremont & Suffolk Mills, Lowell, Mass., has been promoted to an overseers position with the same company.

Woolen.

Haywood Ramsden, who is now overseer of finishing for Milner & Company at Moosup, Conn., was formerly with Franklin Glazier & Son, in their Hopewell Mills, at South Glastonbury, Conn.

J. Jenkins, formerly at Broad Brook, Conn., is now in the weaving department of the Mineral Springs Woolen Mills, at Stafford Springs, Conn.

A. H. Trent, of Utica, N. Y., has recently accepted a position with the Indian Spring Woolen Co., Madison, Maine.

Geo. Howell, formerly at North Salem, Mass, is now in the weaving department of the Washington Mills, at Lawrence, Mass.

John M. Leonard, who formerly held the position of overseer of carding in the Blackinton, (Mass.) Mills, now holds a similar position with the Collinsville (Mass.) Woolen Mills.

Edwin H. Fenley now has charge of a section in the Linnwood Mill, at Briggsville North Adams, Mass. He was recently with the Great Falls Woolen Co., Somersworth, N. H., formerly with the Geabe Woolen Mills.

John Wilcox has once more returned to his former position with the Springfield Worsted Co., at Bordentown, N. J.

Edward Muldowney has returned to Manton, R. I., where he has accepted a position in the Manton Mill.

Arthur Craft has secured a position with the Hockanum Woolen Mills, Rockville, Conn.

William Moore is now in the employ of the Hockanum Company, Rockville, Conn.

J. Charles Green, who has recently been with C. D. & C. S. Chase, at Killingly, Conn., is now on a trip through the west.

John Webber, of Salem, Oregon, has been engaged to superintend the San Jose Woolen Mill, at San Jose, California.

Jos. Isles, formerly with the Nonantum Worsted Company, Newton, Mass , is now at Louisville, Ky., where he has accepted a position in one of the mills there.

Geo. Howell is now overseer of carding at the Washington Mills, Lawrence, Mass.

A. F. Bright has accepted the position of designer with Worrall & Taylor, Bridgeport, Penn. He has for several years held a similar position with the Brookside Mfg. Co., Lenni, Pa.

Oscar Pipping is overseer of dyeing in the Lapham Mill, at Millbury, Mass.

Edward Blanchard has secured a position in the mechanical department of the Millbury (Mass.) Woolen Mill.

James Swan has severed his connection with the Glen Woolen Company, of Shewvill, Conn.

Joseph Daly has resigned the position of overseer of carding, that he has held during the past six years with the Pontoosuc Woolen Company, at Pittsfield, Mass.

Fred. Neff has accepted the position of overseer of the finishing department at the Gevena Worsted Mills, of Providence, R. I. He was recently at Millbury, Mass.

Joseph Swindells, Jr., is now with the Confrexville Manufacturing Company, Manville, R. I.

William Goodman is now in the dressing department of the Sheffield Worsted Mills, at Pascoag, R I.

Fred Carter, formerly employed as section hand in the White Mill, at Bridgeton, R. I., has secured a position with the Glendale (R. I.) Company.

Arthur North is now with Firth & Foster of Philadelphia, Penn. He was formerly overseer of the finishing department with Edward Steel & Co., Bristol, Penn.

Edward Fanning, superintendent of the Pascoag (R. I.) Worsted Mills, has resigned.

C. A. Cobbett is now overseer of carding for Edward M. Rockwell, Leominster, Mass.

Lester Royal, of Dexter, Maine, has accepted a position as dresser for the Dews Woolen Co., North Dexter, Me.

Joseph Booth is now in the employ of the Assabet Mfg. Co. at Maynard. Mass.

James Swan has severed his connections with the Green Woolen Company, of Shewville, Conn.

E. Dailey is in charge of the dyeing department at the Black River Woolen Co.'s mill, Ludlow, Vt.

Knit.

M. W. Brooks has been appointed superintendent of the New Britain (Conn.) Knitting Mills.

J. J. Costello, superintendent for the New Britain Knitting Company, at New Britain, Conn., has severed his connections with that concern.

J. F. Hillyer, has resigned his position as overseer of spinning for the Portsmouth (Va.) Knitting Co., and has accepted a similar one with Dunn Smith & Co., of Fort Plain, N. Y.

John Graham has accepted the position of carder with the Star Knitting Company of Cohoes, New York.

Arthur Gee, Superintendent of the Stafford-Huguley Hosiery Co., Barnesville, Ga., has resigned his position.

E. H. Bloodworth, has recently been appointed superintendent of the Strafford Huguley Hosiery Co., at Barnesville, Ga.

Chas. Sanderson, overseer with C. B. Alling, Birmingham, Conn, has resigned.

Gustav Reichelt has accepted the superintendent's position with the Central Knitting Works, of Camillus, N. Y.

Frank Gill has accepted a position as overseer of the rib knitting department in the Cohoes (N. Y.) Knitting Mill.

John Donohue, president of the Genendaho Knitting Co., Mechanicsville, N. Y., has resigned.

Silk.

Samuel Berchy is in charge of designing and weaving at the Turner Silk Mill, Turnerville, Conn.

Miscellaneous.

A. B. Clough, designer for the Merrimack Mills, of Lowell, Mass., is back from his European tour.

Cornelius Shea has resigned his old position in the Manton, (R. I.) Mill.

W. B. Cole, secretary of the Great Falls Mfg. Co., Rockingham, N. C., will probably attend the Lowell, (Mass.) Textile School.

Charles P. Morse, employed in the weaving department of the Amory Mills, Manchester, N. H., has resigned his position there, in order that he may take a three years' course at the Lowell Textile School.

Hon. M. T. Stevens is Back from his Southern tour.

Howland Croft, the worsted manufacturer is said to be making preparations for a trip around the world.

Joseph H. Long is now in charge of the books for Rhodes Bros.

—D. E. Saunders, is now in charge of the mill supply department of James Foley & Co. successors to Putman & Foley, Boston, Mass.

Thos. F. Andrews, overseer of spooling and dressing in the Slater Woolen Co.'s mill at Webster, Mass., has resigned and accepted a position with the Boston Belting Co., Boston, Mass

John Ballantyne, formerly with the Warombo Woolen Mills, at Lisbon, Maine, is now representing C. E. Riley & Co., of Boston, Mass.

Marriages.

Mr. E. K. Hubbard, president of the Russell Mfg Co., at Middletown, Conn., and Miss Margaret S. Hubbard.

Mr. H. T. Pettit. clerk for the Clifton (S. C.) Mfg. Co., and Miss Ola Stewart, of Gainesville, Ga.

Continued on page 124.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Architects and Mill Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Paterson, N. J.

Automatic Boiler Feeds.
D'Este & Seeley Co, 29 Haverhill St, Boston

Balling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark N. J.

Bandings.
See under Yarns.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Danforth Belting Co, 221 Chestnut St, Phila, Pa.
Fell, Geo. & Son, Bolton, England.
Munson, Chas, Belting Co, Phila, Pa.
Standard Mill Supply Co, 77 Exchange Pl, Providence, R. I.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Danforth Belting Co, 221 Chestnut St, Philadelphia, Pa.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.

Bobbin Covers.
Hegeman, John, Amsterdam. N. Y.

Bobbins, Spools, Shuttles, Etc.
Standard Mill Supply Co, 77 Exchange Pl, Providence, R. I.
Woonsocket Shuttle Co, Woonsocket, R. I.

Boiler Compounds.
Imperial Chemical Co, 432 Market St, Phila, Pa.
Lord, G. W, 316 Union St, Phila, Pa.

Boxes, Paper.
Palmer, J. S, 35 Wistar St, Germantown, Pa

Boxes, Wooden.
Pearson, J. T, Kensington, Pa.

Braids.
See Tapes and Braids.

Braiding Machines.
Thun & Janssen, Reading, Pa.

Burr Pickers.
Atlas Mfg. Co., Newark, N. J.
Sargent's, C. G., Sons, Graniteville, Mass.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Leigh, Evan A, 35 Mason Building, Boston.

Card Feeds.
Atlas Mfg. Co , Newark, N. J
Kitson Machine Co, Lowell, Mass.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Calico Printers' Machinery and Supplies.
New Bedford Copper Co, New Bedford, Mass.
See also Dyeing, Bleaching Machinery, etc.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester, Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Chemicals.
De Ronde, A, & Co, 254 Front St, New York.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.

Chemist.
Huntington, Dr. H, 159 Front St, New York.

Coal.
Dominion Coal Co, Ltd, 95 Milk St, Boston

Copper Print Rollers.
New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Brabender, Chas, Sr, Paterson, N. J.
Oat, Jos. & Sons, 232 Quarry St, Phila, Pa.

Cotton.
Blaisdell, S, Jr, Co, Chicopee, Mass.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N 4th St, Phila, Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton Machine Co. Lowell, Mass.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester Mass.
Draper Company, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co, Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lowell Machine Shop, Lowell, Mass.
McKerrow & Bennett, 31 State St, Boston, Mass.
Mason Machine Works, Taunton, Mass.
Providence Machine Co, Providence, R. I.
Saco Water Power Machine Shop, Biddeford, Me.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Thun & Janssen, Reading, Pa.
Whitin Machine Wks, Whitinsville, Mass.
Woonsocket Machine & Press Co, Woonsocket, R, I.

Cotton Openers and Lappers.
Atherton Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kitson Machine Co, Lowell, Mass.
McKerrow & Bennett, 31 State St, Boston, Mass.

Cotton Webbing.
Witter, H. M, & Co, Worcester, Mass.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Damper Regulators.
D'Este & Seeley Co. (Curtis), 29 Haverhill St, Boston, Mass.

Designers.
Fresnel, Gustave, 125 W. 56th St, N. Y.
Hand, F, & Co, Paterson, N. J.

Dryers.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dyeing, Bleaching and Finishing.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Greenwood, R, & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Kensington Dye Works, Kensington, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
Birch Bros., Somerville, Mass.
Butterworth, H. W, & Sons Co, Phila, Pa.
Delahunty Dyeing Machine Co, 152 N. Front St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Lincoln & Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co, Springfield, Vt.
Phenix Iron Foundry, Providence, R. I.
Rockwell, W. S. & Co, 26 Cortlandt St, N. Y.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Woonsocket Machine & Press Co, Woonsocket, R. I.

Dye Sticks.
Haedrich, E. M, 311 1-2 Walnut St, Phila, Pa.

Dyestuffs and Chemicals.
Anchor Color Mfg. Co, 464 Cherry St, New York.
Arnold, Peck & Co, Providence, R. I.
Ashley, T. C, & Co, 145 Milk St, Boston.
Atteaux, F. E, & Co, 172 Purchase St, Boston, Mass.
Beach & Co, Hartford, Ct.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Corey, S. J, 273 Congress St, Boston.
De Ronde, A, & Co, 254 Front St, New York.
Farbenfabriken of Elberfeld Co, 77 William St, N. Y.
Geisenheimer & Co, 189 Front St, New York.
Hanna, W. W, 52 N. Front St, Phila, Pa.
Hanna-Schoellkopf Co, Philadelphia, Pa.
Harway Dyewood & Extract Mfg. Co, 184 Front St, N. Y.
Jaeck Bros, J, 62-68 No. 11th St, Brooklyn, N. Y.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y.
Johnson, Wm. G, & Co, Uncasville, Conn.
Kalbfleisch, Franklin H, Co, New York.
Kalle & Co., 77 John St., N. Y.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 79 Murray St., N. Y.
Matheson, W. J, & Co, 178 Front St, N. Y.
Merrimac Chemical Co, Boston, Mass.
Nashoba Co, Ayer, Mass.
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Phillips, Moro Chemical Co, 151 S. 3d St, Phila., Pa.
Polhemus, Henry, 66 Maiden Lane, N. Y.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.
Sharpless Dye Wood Ext. Co, 22 N. Front St, Phila, Pa.
Stamford Mfg. Co, 157 Maiden Lane, N. Y.
Sykes & Street, 85 Water St, N. Y.

Dyers and Finishers.
Bay State Dyeing & Finishing Co, North Andover Depot, Mass.
Boston Finishing Works, Williamstown Mass.
Cranston Worsted Mills (yarns), Bristol R. I.
Firth & Foster Co, Kensington, Pa.
Greenwood, R, & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket, R. I.
Kensington Dye Works, Kensington, Pa.
Oakdale Dye Works, 913 W. York St, Phila, Pa.
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Warren, W, Thread Works, Westfield, Mass.

Dyers' Clogs.
Wildman, Jos, & Co, 1908 N. Front St, Phila.

Electrotyping and Printing.
J. J. Ryder & Co, 210 Westminster St, Providence, R. I.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Graves Elevator Co, Rochester, N. Y.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Salem Foundry & Machine Shop, Salem, Mass.

Engineers, Electrical.
Smeallie Bros, Amsterdam, N. Y.

Engineers, Mechanical.
Berlin Iron Bridge Co, E. Berlin, Ct.
Ferguson, John W, Paterson, N. J.
Smeallie Bros, Amsterdam, N. Y.

Engraving on Wood.
Ryder Co, J. J, 210 Westminster St, Providence, R. I.

Express Money Orders and Travelers' Cheques.
American Express Co, offices in every city

Factory Sites.
Dolge, Alfred, Dolgeville, N. Y.
Illinois Central R. R, 506 Central Station Chicago, Ill.
Lyndonville (Vt.) Board of Trade.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Phœnix Iron Foundry, Providence, R. I.
Smeallie Bros, Amsterdam, N. Y.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River. Mass.

Fuel Oil Furnaces.
Rockwell, W. S, & Co, 27 Cortland St, N. Y.

Fulling Mills for Knit Goods.
Scott, H. W, Bennington, Vt.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.

Gas Singeing Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Rockwell, W. S. & Co, 26 Cortlandt St, N. Y.

Gear Cutting Machine.
Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E, Co, New London, Conn.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Index.
Burr Index Co, 336 Asylum St, Hartford, Conn.

Insurance (Employers' Liability).
Employers' Liability Assurance Co, 28 Central St, Boston, Mass.

Knit Goods Edgings, Trimmings, etc.

Byram, F. A, Germantown, Pa.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Friedberger, C, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, 2632 Mascher St, Phila.

Knit Goods Finishing Machines, Crochet, Etc.

Champion Sewing Machine Co, 1819 N. 5th St, Phila, Pa.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.

Knitting Machine Cylinders.

Ashman, Stephen A, 3 Fetter Lane, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Stanton & Lewis, 318 Branch St, Phila, Pa.

Knitting Machinery.

Ardrey, S. B, & Sons, Bristol, Pa.
Boss Knitting Machine Co, 7th and Walnut Sts, Reading, Pa.
Brinton, H, & Co, 213 Race St, Phila, Pa.
Campbell & Clute, Cohoes, N. Y.
Champion Sewing Machine Co, N. W., cor. American and Diamond Sts, Phila, Pa.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Co, South Bethlehem, Pa.
Hepworth & Co, Lehigh Ave. and Mascher St, Phila, Pa.
Hodgson & Holt, Laconia, N. H.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Automatic Napping Machine Co, Spring City, Pa.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Mueller, A, 760 Lexington Ave, Brooklyn, N. Y.
National Automatic Knitter Co, Cherry St, Philadelphia, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Payne, G. W. & Co, Pawtucket, R. I. (Winders.)
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Standard Machine Co., 506 Minor St., Philadelphia, Pa.
Taylor, James, 835 Arch St, Phila, Pa.
Union Raveller Co, Troy, N. Y.

Knitting Needles.

Breedon, Wm, & Son, Amsterdam, N. Y.
Corey, Wm, Co, Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Lydall, H, & Foulds, Manchester, Conn.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Star Needle Co, New Britain, Conn.
Stoops, H. R, & Co, 66 No. 4th St, Phila, Pa.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.

Bullock & Crenshaw, 528 Arch St Phila, Pa.

Looms.

Crompton Loom Works, Worcester, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Riehl, Henry & Son, 1130 Charlotte St, Philadelphia, Pa. (For narrow fabrics.)
Whitin Machine Works, Whitinsville, Ms.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Loom Picker Manufacturers.

Crompton Loom Works, Worcester, Mass.
Loom Picker Co, Biddeford, Me.
Novelty Loom Picker Works, 3-7 So. 48th St, Philadelphia, Pa.

Lubricators.

Dixon, Jos, Crucible Co, Jersey City, N. J.

Lumber.

Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.

Gerry, George, & Son, Athol, Mass.

Machinery Dealers.

Schofield, Geo. L, 123 N. Front St, Phila,
Scott, James, 123 No. Front St, Phila, Pa.

Machinery Wipers.

American Silk Mfg. Co, 311 Walnut St, Philadelphia, Pa.

Machinists' Tools.

Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E. Co, New London, Conn.

Mails.

Walder, J, Paterson, N. J.

Manufacturing Chemists.

Kalbfleisch, Franklin H, Co, New York.

Measuring and Folding Machines.

Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Harmon St, Worcester, Mass.

Mill Builders and Engineers.

Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Paterson, N. J.

Mill Supplies.

American Supply Co, Providence, R. I.
Ashoff, Charles, 191 Berks St, Phila, Pa.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Hill, Jas, Mfg. Co, Providence, R. I.
Standard Mill Supply Co, 77 Exchange Pl, Providence, R. I.
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg. Co, Leicester, Mass.

Napping Machines.

American Napping Machine Co, Williamstown, Mass
Ardrey, S. B, & Sons, Bristol, Pa.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Machine Co, Springfield, Vt.
Woonsocket Napping Machine Co, Woonsocket, R. I.

Oilless Bearings.

N. American Metalline Co, 62 W. Ave. and 3rd St, Long Island City, N. Y.

Paints.

American Fire Resisting Paint Co, 17 Broadway, New York.
Devoe & Reynolds, Fulton and Williams St, New York.

Pantagraphs for Mill Engraving.

Johnson, C. A, 22 Dey St, New York

Patent Solicitors.

Crosby & Gregory, 34 School St, Boston, Mass.
Wright, Brown & Quinby, 53 State St, Boston, Mass.

Penstocks.

Dalrymple, George, Fair Haven, Vt.

Peroxide of Sodium.

Roessler & Hasslacher Chemical Co., 73 Pine St, New York.

Picker Sticks.

Loom Picker Co., Biddeford, Me.

Picking, Carbonizing and Garnetting.

Garfield Woolen Co, Garfield, N. J.

Pipe Covering (Magnesia).
Keasby, R. A, 54 Warren St, New York.
Keasby & Mattison Co, Ambler, Pa.
Nightingale, S. C, & Childs, Atlantic Ave, Boston, Mass.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Cresson, Geo. V, Co, Philadelphia, Pa.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kilburn, Lincoln & Co, Fall River, Mass.
Smeallie Bros, Amsterdam, N. Y.

Presses.
Crawford, J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Pownall, F. H, Iron Works, Jamesburg, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Pressure Regulators for Steam and Water.
D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass.

Printers and Embossers.
Novelty Textile Printing Co, 525 W. 24th St, New York.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Kalbfleisch, Franklin H, Co, New York.
Smeallie Bros, Amsterdam, N. Y.

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Gowdey, J. A, & Co, Providence, R. I.
Loom Picker Co, Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.
Cheney Bros, S. Manchester, Ct.
Friedberger, C, Germantown, Pa.

Roller Skins.
Fell, Geo, & Son, Bolton, England.

Roofing, Gravel, Slag and Composition.
Armitage Mfg. Co, Richmond, Va.
Warren Chemical & Mfg. Co, 45 Fulton St, New York.

Roofing, Paint and Paper.
Armitage Mfg. Co, Richmond, Va.

Roving Cans and Sheet Metal Work for Mills.
Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Saddles, Stirrups and Levers.
Dixon Lubricating Saddle Co, Bristol, R. I.

Schools.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Sewing Machines and Supplies.
Birch Bros., Somerville, Mass.
Champion Sewing Machine Co, N. W., cor. American and Diamond Sts, Phila, Pa.
Dinsmore Mfg. Co, Salem, Mass.
Frame, Gibbons, 2nd and Diamond Sts, Phila. Pa.
Mills, Wm, 120 No. 7th St, Philadelphia, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Stoops, H. R, & Co, 66 No. 4th St, Phila, Pa.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Crompton Loom Works, Worcester, Mass.

Singe Plates.
New Bedford Copper Co, New Bedford, Ms.

Sizing.
American Glutrose Co. Penn Mutual Bldg, Phila, Pa.

Skylights (Metal).
Van Noorden & Co, Boston, Mass.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.

Soaps.
American Soap & Washolene Co, Cohoes, N. Y.
Holbrook Mfg. Co., 466 Washington St., N. Y.
India Alkali Works, Boston.

Spindles.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Providence Machine Co, Providence, R.I.
Ward & Vandegrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spinning Cylinders.
Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass.
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinners' Supplies.
Dixon Lubricating Saddle Co, Bristol, R. I.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Providence Machine Co, Providence, R. I.

Steam Boilers.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Damper Regulators.
D'Este & Seeley Co, 29 Haverill St, Boston Mass.

Steam Engines.
Brown, C. H, & Co, Fitchburg, Mass.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Newburgh Ice Machine & Engine Co, Newburgh, N. Y.
Toomey, Frank, 131 N 3d St, Phila, Pa.

Steam Separators.
D'Este & Seeley Co. (Curtis), 29 Haverill St., Boston.

Steam Specialties.
D'Este & Seeley Co, 29 Haverhill St, Boston.
Simmons, John & Co, 106-110 Centre St, N. Y.

Steam Traps.
D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass. (return float and expansion).
Haines, W. S, 136 So. 4th St, Phila, Pa.

Steel Castings.
Chester Steel Castings Co, 407 Liberty St, Phila, Pa.

Tanks, Tubs and Vats.

Brabender, Chas, Sr, Paterson, N. J.
Corcoran, A. J, 11 John St, N. Y.
Cypress Lumber Co, Apalachicola, Fla.
Cypress Tank Co, Bridgeport, Florida.
Hall, Amos H, No. 2nd above Cambria, Phila, Pa.
Oat, Jos, & Sons, 232 Quarry St, Phila, Pa.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa

Tapes and Braids.

Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Perseverance Mills, 2632-40 Mascher St Phila, Pa.
Witter, H. M. & Co, Worcester, Mass.

Teasels.

Kellogg, Thos. C, Skaneateles, N. Y.
Kellogg, Wm, W, Skaneateles, N. Y.
McLaughlin Bros, Skaneateles Falls, N. Y.

Temperature Regulators.

D'Este & Seeley Co, 29 Haverhill St, Boston.
Haines, W. S, 136 So. 4th St, Phila, Pa.

Tentering Machines.

See Dyeing, Bleaching Machinery, Etc.

Tension Pulleys.

N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Testing Machines.

Howard, Geo. C., 1783 Barker St., Phila., Pa

Traveler's Cheques.

American Express Company.

Turbines.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
James Leffel & Co, Springfield, Ohio

Valves.

D'Este & Seeley Co, 29 Haverhill St, Boston, Mass.

Ventilating Apparatus.

Berry, A. Hun, 23 W. 1st St, Boston, Mass.
New England Heating & Ventilating Co, Providence, R. I.
Panconst Ventilator Co, Phila, Pa.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Van Noorden & Co, Harrison Ave, Boston, Mass.

Washers (Cloth).

Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.

Watchman's Clock.

Eco Magneto Co, 620 Atlantic Ave, Boston.
Nanz & Co, 116 Chambers St, New York.

Water Pressure Regulators.

D'Este & Seeley Co, 29 Haverhill St, Boston.

Water Wheels.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
Humphrey Machine Co, Keene, N. H.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.

Cohoes Foundry & Machine Co, Cohoes N. Y.
Leffel, James & Co, Springfield, Ohio.
Lombard Water Wheel Governor Co, 61 Hampshire St, Boston.
Replogle Governor Works, Akron, Ohio.

Winders. (Hosiery.)

Payne, G. W. & Co, Pawtucket, R. I.
Universal Winding Co, 226 Devonshire St, Boston.

Wool.

Lyon, John H, & Co, 12 Reade St, N. Y.
Webb, Chas. J. & Co, 156 N. Front St. Phila, Pa.

Wool Cleaning Compound.

India Alkali Works, Boston.

Wool Combing Machinery.

Crompton Loom Works, Worcester, Mass.

Wool Extracts.

Daly, Jas. E., & Co., 105 River St., Paterson, N. J.
Garfield Woolen Co, Garfield, N. J.
Muhlhauser, F, Co, Cleveland, Ohio.
Sullivan, R. T, 155 Federal St, Boston, Mass.

Wool and Waste Dusters.

Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Stillman-Randall Machine Co, Westerly, R. I.

Woolen Machinery.

Altemus, W. W, & Co, 2816 N. 4th St, Phila Pa.
Atlas Mfg. Co., Newark, N. J.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kitson Machine Co, Lowell, Mass.
McKerrow & Bennett, 31 State St, Boston, Mass.
Payne, G. W. & Co, Pawtucket, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Thun & Janssen, Reading, Pa.
White, John F, 38 River St, Providence, R. I.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Wool, Hair and Noils.

Fowles & Co, 102 Church St, Phila.
Lyon, John H, & Co, 12 Reade St, N. Y.
Muhlhauser, F, Co, Cleveland, Ohio.
Webb, Chas. J, & Co, 156 N. Front St, Phila Pa.

Wool Sheddics.

Bowers', James, Sons, Ltd, Chester, Pa.
Garfield Woolen Co, Garfield, N. J.
Muhlhauser, F, Co, Cleveland, Ohio.
Riverdale Woolen Co, Riverdale, Northbridge, Mass.

Wool Sorters and Scourers.

Duross, Theodore A, Kensington Ave. and Huntingdon St, Phila.

Wool Washing, Preparing and Drying Machinery.

Kitson Machine Co, Lowell, Mass.
Sargent's, C. G, Sons, Graniteville, Mass.

Yarns, Threads, Etc.

Banding.

Kenyon, John J, Pawtucket, R. I.
Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass
Whittier Cotton Mills, Lowell, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
White, James F, & Co, N. Y. and Phila, Pa.
Whittier Cotton Mills, Lowell, Mass.

Carpet Yarns.

Fleming & Chapin, 215 Church St, Phila, Pa.

Colored Cotton Yarns.

Eichman & Sternberg, 488 Broadway, N. Y.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Wilmington Mills Mfg. Co, Wilmington Del.

Cotton Warps and Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Clark, Wm. Co, Westerly, R. I.
Cohannet Mills, Taunton, Mass.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa
Germantown Spinning Co, Germantown Pa.
Globe Yarn Mills, Fall River, Mass.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Hawes, O. S, & Bro, Fall River, Mass.
Holland & Webb, 487 Broadway, N. Y.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York City.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Monument Mills, Housatonic, Mass.
North Athens Cotton Mills, Athens, Tenn.
Orswell Mills, Fitchburg, Mass.
Sampson, O. H, & Co, 67 Chauncy St, Boston, Mass.
Montgomery, J. R, Co, Windsor Locks, Ct.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co., 86-88 Franklin St.
Skerry, A. T, 47 Leonard St, New York.

Gassed Yarns.

Greene & Daniels Mf Co, Pawtucket, R. I.
King, Alex, & Co, Leonard St, New York.

Glazed Yarns.

Blodgett & Orswell, Pawtucket, R. I.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
King, Alex, & Co, 54 Leonard St, New York.
Malcolm Mills Co, Frankford, Pa.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Hadley Co, 95 Milk St, Boston, Mass.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
King, Alex, & Co, 54 Leonard St, New York.
Moore, C, & Co, 12 S. 5th St, Pilha, Pa.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Boyer, B. F, & Co, 516 Market St, Philadelphia, Pa.
Campbell, Geo, & Co, Phila, Pa.
Clark, Wm, Co, Westerly, R. I.
Clasgens, The J. & H. Co, New Richmond, Ohio.
Cohannet Mills, Taunton, Mass.
Croll, Albert Ivins, Boston, Mass.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Germantown Spinning Co, Germantown, Pa.
Globe Yarn Mills, Fall River, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Holland & Webb, 487 Broadway, N. Y.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York.
Monument Mills, Housatonic, Mass.
Orswell Mills, Fitchburg, Mass.
Porter Bros, 78 Worth St, New York.
Rockwell, E. M, Leominster, Mass
Sampson, O. H., & Co., 67 Chauncy St., Boston, Mass.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86-88 Franklin St, N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Trenton Worsted Mills, Trenton, N. J.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Jute Yarns.

Eichman & Sternberg, 488 Broadway, N. Y
Wilmington Mills Mfg. Co, Wilmington Del.

Mohair Yarns.

Eichman & Sternberg, 488 Broadway, N. Y
Holland & Webb, New York.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I.
Eichman & Sternberg, 488 Broadway, N. Y.
Holland & Webb, New York.
Malcolm Mills Co, 216 Chestnut St, Phila, Pa.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Ramie.

Holland & Webb, New York.
Sampson, O. H., & Co., 67 Chauncy St., Boston, Mass.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Hawes, O. S, & Bro, Fall River, Mass.
Holland & Webb, 487 Broadway, N. Y.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Spun Silk Yarns.

Champlain Silk Mills, Whitehall, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, 516 Market St, Philadelphia, Pa.
Clasgens, The J. & H. Co, New Richmond, Ohio.
Hollister Bros, 160 5th Ave, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
King, Alexander & Co, 54 Leonard St, N. Y.
Mitchell, Jas. E. & Co, Boston, Mass, and Phila, Pa.
Porter Bros, 78 Worth St, New York.
River Spinning Co, Woonsocket, R. I.
Rockwell, Edward M, Leominster, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, 516 Market St, Philadelphia, Pa.
Campbell, Geo, & Co, Phila, Pa.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson St, Camden, N. J.
Eichman & Sternberg, 488 Broadway, N. Y.
Herbst & Jones, 21st and Naudain Sts, Philadelphia, Pa.
King, Alexander & Co, 54 Leonard St, N. Y.
Porter Bros, 78 Worth St, New York.
Sawyer, Manning & Co., 86-88 Franklin St, N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
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The Textile World's Information Department

Is the BEST system of communication between manufacturers wanting men, and superintendents and overseers wanting positions.

It is in immediate charge of a practical mill superintendent, who gives personal attention to each case. There is no charge to manufacturers, nor is there any "entrance fee" to applicants, but if a position is secured a very moderate charge is made to the applicant. We will not knowingly enter the name of an incompetent or intemperate man.

Hundreds of superintendents and overseers are now satisfactorily filling positions obtained through us, and scores of the best mills use this Bureau EXCLUSIVELY, because they have found it to be the best and most satisfactory. Its methods are prompt, courteous, business-like and strictly confidential.

Correspondence solicited.

TEXTILE WORLD'S INFORMATION DEPARTMENT,
620 Atlantic Ave., Boston, Mass.

SITUATIONS WANTED.

W. H. COTTON.

A practical mill man is in charge of the Information Department and Overseer's Bureau.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD, or inquiries concerning them may be addressed directly to "Information Department, TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions, are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1219 **Superintendent.** A young man who has had a practical experience in every department of a woolen mill, including designing, wishes to secure a position as superintendent, designer or both. Is highly recommended by his present employers for whom he holds a position as overseer. His strong points are on cassimeres, cheviots and Unions.

1208 **Designer or Superintendent.** Graduate of textile school. Experienced in most kinds of woolens. During the eight years very successful on fancy worsteds and cassimeres, also overcoatings. 35 years of age and married. The best of references as to ability and character.

1203 **Superintendent, Woolen,** or superintendent and designer. Age 39; married. Has held a position as superintendent 9 years; 2 years in one mill and 7 in another. Has good references. A good man on meltons, coverts, cassimeres, worsted and kerseys; also serges.

1186 **Woolen** Assistant Superintendent or designer. Age 26. Graduate of Philadelphia Textile School. Fancy woolens and novelty dress goods. Familiar with English and American machinery. First-class references.

1174 **Woolen Superintendent** wants a position as superintendent, designer or weaver. Age 47; married. Crompton or Knowles looms, cheviots, suitings, tricots and face goods Don't want a position in Canada. Good references.

1170 **Woolen Superintendent** wants a position as superintendent and designer of a small mill, or superintendent of a large mill. Age 54; marrried. Don't want a position in any of the Southern or Western states. Has worked on a great variety of goods, and can refer to reliable parties.

1159 **Woolen Superintendent.** A first class man on carriage robes, furniture plush, bed and horse blankets. Has excellent references. Has held present position as superintendent for several years; good reasons for desiring a change. Age 39; married.

1154 **Agent** or Superintendent, has had a good experience in every department of a cotton mill, and understands manufacturing ducking, carpet yarns, hosiery yarns, seine twine and netting; also various other kinds of white goods. Age 31; single. Refers to past employers.

COTTON SUPERINTENDENTS.

1220 **Cotton Mill Superintendent** or overseer of weaving wants position. Age 37. Has had a good experience and is well recommended. Cotton goods, plain or fancy. Can design.

1114 **Superintendent and Overseer,** wants position on cotton goods, has had a first-class experience, and can furnish first-class references. Will go anywhere; age 39 and married; salary reasonable; is a first class man on seamless bags.

1108 **Cotton Superintendent** or would accept position as overseer of large mule spinning department. Has good references and a first-class record, and is a thorough mechanic; familiar with all kinds of yarns, especial hosiery and prints; age 40 and married.

1133 Is a good man on cotton goods; age 43; married; American, wants position as superintendent. Refers to first-class companies; is well posted on various kinds of machinery.

1184 **Cotton Mill Superintendent,** wants position. Age 50; married. Sheetings, shirtings, drills, etc.; also all kinds of yarns and yarn dyeing. Has good references. Superintendent eighteen years at one mill.

1177 **Superintendent** wants position in cotton mill. Will accept position as assistant superintendent, or weaver and designer. Is familiar with a great many kinds of work. Has held positions in some of the largest mills in New England, and refers to men who hold high positions in the best mills; age 35; married.

WOOLEN CARDERS.

1147 **Woolen Carder.** Age 45; married. Overseer 18 years in one place. Long experience on all wool, wool and cotton mixed, shoddy, etc., etc. Will go anywhere except Canada.

710 **Low stock his strong point,** but has carded all kinds of stock. Age 40; married. Salary $3.00.

1082 **Woolen carder experienced on** all classes of underwear. Has worked for eight years in one mill, 29 years of age and married. Good references.

1197 **Woolen Carder** wants position. Overseer over 16 years in some of the best woolen mills. Accustomed to all kinds of work. Age 50; married. Well recommended.

1190 **Woolen** Carder or Spinner. Age 47; married. One reeler and one piecer in family. Has been overseer and spinner for the last fifteen years for one firm, which is now out of business. Refers to past employers. Can take position at once. Familiar with wool shoddy and cotton; Furbush, Lee and other makes of machinery.

1153 **Comber.** Understands repairing and running combers, speeders and cards. Overseer seven years in one of England's fine mills, on counts ranging from 120s to 150s. Will accept a position as overseer or 2d hand. Refers to responsible parties as to ability and character.

1213 **Woolen Carder** wants position. Age 45 and married. Is familiar with a great variety of work.

COTTON CARDERS.

910 **Is a good carder** on plain, colored and fancy white stock. Age 41. $2.50 and up.

1135 **Second Hand of Cotton Carding** and combing. Wants position. Has first-class references. Age 28.

1009 **Overseer of Cotton Carding** is open for a position. Age 40; married.

910 **Overseer** of cotton carding. Good man on white or colored yarns, for plain or fancy work. Age 42; married.

241 **Carder,** cotton. Has had a thorough experience as overseer in some first-class mills, to which he refers. Sheeting yarns a specialty

502 **A First** class cotton carder and spinner is open for an engagement. References are of the best.

WOOLEN SPINNERS.

1112 **Overseer of Woolen Spinning** wants position. Has first-class references. Age 37. Wages reasonable. Will accept second hand's position.

967 **Woolen Spinner.** Age 28; single. Wants position where there is an opportunity to rise in the business.

1195 **Spinner, Woolen.** American; age 31; married. Experienced on yarns from 1 to 7 1-2 run. Refers to past and present employers. Wants position as overseer. Will not go to Southern States, Canada or Connecticut. Is an experienced overseer.

1111 **Overseer of Spinning** wants position. Age 48 and married. Has good recommendations from last employers. Has worked on cassimeres, wool shoddy, fancy elderwown and flannels. Will go anywhere.

1152 **Woolen Spinner** wants position as overseer or 2d hand, in Southern or Western States, or Pennsylvania. Age 20; single. Understands Johnson & Bassett operators and mules. Has worked on a variety of goods. Good recommendations as to character and ability.

COTTON SPINNERS.

1198 **Cotton Spinner,** spooling, warping, slashing, web drawing, skein winding and quilting on linen. Well recommended. Age 42; married. Has worked in some of the best mills. Will go anywhere. Would accept a good second hand's position.

1171 **Overseer of Cotton Ring Spinning.** Age 25; good references. Has made yarns from number 8s to 100s. A good manager of help.

1196 **Mule or Ring** cotton spinner wants position as overseer. Age 36; married; 12 years in one mill; 6 years as mule spinner, 2 years as second hand and 4 years as overseer. Has had a very thorough experience on tickings, shirtings and denims. Used to both English and American make of machines. References are good; can accept position at once.

1189 **Spinner, Cotton, Mule or Ring.** Age 33; married. Ginghams, dress goods, flannels and hosiery yarns. English or American make of machinery. References if desired. Don't want a position in Maine, Canada or any Western state.

1187 **Overseer of Dressing** or spinning wants a position in a cotton mill. Is an A1 man on colored or white goods, and understands slashing and beaming thoroughly. American; age 38; married. Has had charge in some of the best mills of New England. Sheetings, shirtings, dress goods, cheviots, flannels and sateens. Familiar with Mason, Whitin and Lowell machinery.

1176 **Ring Spinner, Overseer** wants position on medium, fine or coarse spun yarns; age 38; married. Can take position at once. Can furnish satisfactory references from past and present employers. Good reasons for wishing to make a change.

1158 **Overseer of Ring Spinning,** spooling, warping and slashing wants position on white work, fine or coarse. Age 46; single. Will go anywhere. Good references. Familiar with Mason, Bedford, Lowell and Fales & Jencks machinery.

1204 **Situation wanted** as boss spinner, or second hand and mule fixer on Pla t mules. Many years experience on yarns for dress goods in England, and also yarns for fine woolen cloth. 35 years old and married; good references.

WOOLEN WEAVERS.

1216 **Weaving and Dressing.** Man wants position as overseer of weaving or dressing, or both, in some good woolen mill. Has had 16 years' experience. Can pick patterns and figure yarns. Has references.

1172 **Wants an Overseer's Position.** Has had charge of weaving and dressing, and is a designer. Crompton, Knowles or Gilbert looms. Two workers in family. Has first class references.

1130 **Overseer of Woolen Weaving** wants position. Would accept 2nd hand's position in a good mill. American; protestant; age 36; single. Good man on Knowles fancy and plain looms, also Davis & Furber. Cassimeres, worsteds, meltons and flannels Will not go South, West or Pennsylvania.

1008 **Wants boss job in flannel mill.** Northern New England preferred, also a good man for dresser or fixer, has worked on flannels, serges, cheviots, fancy dress goods. Is 34, married.

1115 **Overseer of Weaving** wants position in woolen mill; age 50 and married; mill stopped, cause of being out of a position; is a reliable man, first-class references; has worked on dress goods, carriage cloths, blankets, etc.

COTTON WEAVERS.

176 **Wanted.** A position as overseer of weaving, second hand or loom fixer, either in a cotton, woolen or jute bagging mill, by a faithful, sober, steady man, fully capable in either of the above positions. References furnished as to character and experience.

1113 **Overseer of Weaving** woolen or cotton goods; age 30 and married. Will work for moderate pay until ability is proven. Will go anywhere. Has a thorough knowledge of box looms and plain. Can furnish good references if required.

1110 **Overseer of Cotton Weaving,** fancy or plain. Age 42; German. Wants position as overseer, or will take second hand's position. Has had charge where first-class goods are made. Good references.

1073 **Overseer of Weaving,** cotton. Is a good man on fancy work, fine goods, lenos, etc. Has good reference. Age 35; married. Is familiar with the work in some of the best mills in New England.

1127 **Overseer of Weaving.** French. Age 36; married. Understands sheetings, drills and prints. Will go anywhere. Out of work; mill stopped. Refers to past employers.

FINISHERS.

1161 **Woolen Finisher** wants position. American; age 37. Don't want to go to Southern or Western States. Has had a thorough experience on cheviots, cassimeres, broadcloths, mohairs, beavers, cloakings, overcoatings, etc. Good references if required.

228 **Is an A1 Woolen Finisher.** Age 36; married. Has been employed in two of the very best mills in New England, and refers to them as to character and ability.

1041 **Woolen Finisher.** Has had experience on fancy and piece dyed goods, cassmeretes, cheviots, worsteds, kerseys and dress goods. Wants position as overseer or second hand in New England States. Age 26 years. Will work for $2 50 per day.

1207 **Woolen or worsted** finisher wants position as 2nd hand in some first-class mill. Has had a good experience as 2nd hand, and refers to past and present employers; age 28. Especially strong on Scotch tweeds, dress goods and fancy cassimeres. Familiar with English and American machinery.

1214 **Woolen and Worsted Finisher.** A first class man. One that has had a thorough experience in one of the best mills in New England.

DYERS.

1217 **Woolen Dyer,** wants position as boss dyer on beavers, kerseys, dress goods, cloakings, piece dyes, worsted yarns, both with machine and hand dyeing. Also wool in fancy colors.

1145 **Overseer of Dyeing** cotton. Accustomed to cotton thread, cotton, yarn and chaine warp. Has held the position of overseer in first-class mills and has a general knowledge of cotton dyeing. Age 50, married. Now open for an engagement; have references.

754 **Dyer.** Woolen and cotton. A long experience in the leading cotton and woolen mills. First class references. An all-right man.

1165 **Dyer,** wants position on cotton goods, ginghams, stripes, and cotton goods in general, long and short chain. Understands sizing. Southern states or Canada preferred. Now in the South. Age 37; married.

1166 **Dyer** on wool or cotton piece skein and raw stock, cotton and silk noils, and mixed, fibres and knit yarns. Age 40; married. Has had a good experience, and refers to good parties.

1146 **Bleacher and Dyer** wants position. Age 35 and married. Is highly recommended by reliable manufacturers; experienced on all classes of underwear; also skein yarns.

1199 **Dyer.** Wants position on fancy cotton skein yarns, and long and short chains. Has a thorough knowledge of alizarine and indigo blue dyeing. Has twenty years' experience. Can give first-class references.

1201 **Wants** position in laboratory manufacturing, house or mills, or would accept a position as second hand of dyeing. Age 28; single. Has been employed by two of the best houses in the country. Can take position at once. Western and Southern States barred out.

1175 **Finisher or Dyer,** woolen goods, wants position in Western or Southern States; cassimeres, blankets, dress goods, etc. Refers to mills in which he has held position as overseer; age 43; married. References are good.

1149 **Woolen Dyer.** American; age 44; married. Familiar with wool and worsted yarns, piece dyeing, cotton, cotton yarns, shoddy and extracts. Good references.

1188 **Dyer** on cotton yarn or thread. Age 28; married. Will not go South or to Canada. References if required. Six years' experience as second hand in a first class thread mill.

1194 **Dyer, Woolen;** age 32; married. Has held position as assistant dyer and overseer of dyeing. Refers to present employer; good reason for changing. Could take position on one week's notice; worsted yarns, wool in stock and piece dyes.

KNITTERS.

1163 **Knit.** Good man for hosiery mill; understands buying, selling and finishing. Has had first class experience, and can furnish first-class references. Would accept position as travelling salesman.

1164 **Wants Position** as superintendent of hosiery mill, or overseer of woolen carding and spinning. 35 years of age; 9 workers in family. Has good references, and has had a good experience. For further information address No. 1164, care Guild & Lord.

1131 **Manager of Knitting Mill,** or will accept position as finisher and shipping clerk; age 28. Has worked on cotton and wool, flat and fleece, also rib goods. Familiar with many kinds of machinery. References from first class men.

677 **Knitter** wants position. Is a man fully capable of handling a knitting plant, hosiery or underwear. Age 32; married. Best of references as to character and ability. Can take position at once.

887 **Superintendent.** Is a practical mill man with 20 year's experience in carding, spooling and knitting. Age 35. Now employed in one of the best mills in New England.

1173 **Wants Position** as overseer of knitting department. Understands all kinds of machines; plush work, vertical stripes, full fashioned flat cuff, rib knitting, etc. Refers to good people who have known him for 28 years, and others; age 38, married.

1185 **Knit Superintendent or Overseer.** Have successfully started several plants. Understands all kinds of cotton or worsted underwear, and all kinds of machinery, spring or latch. Age 45; married.

1180 Wants position as 2nd hand of carding in woolen or knit mill. Age 23; single. Has been successful in like position. Prefers position in Mass., R. I., Conn., N. H., Penn., N. Y. or N. J. References if required.

1148 **Knitter or Machinist.** Age 28; married. Understands Lamb machines, full fashioned underwear, and ladies' and children's underwear. Good references. Owing to the mill shutting down is now out of work.

MISCELLANEOUS.

1211 **Designer.** Open for an engagement. A first class man on worsteds and woolens, and cotton and worsted mixes, cassimeres and cheviots, cheap and fine goods.

1209 **Book-keeper** is open for an engagement. Will accept a position in any State. Could take a position at once. Has first-class references.

1156 **2nd Hand of Dyeing** or overseer of washing and bleaching wants position. Familiar with knit goods, wool. Age 33. Don't want a position in Canada or the Western or Southern states. Can take position at once; good references.

1162 **Good Man for Beaming Department.** On heavy sized, plain calicoes and colored cotton goods, twills and sheetings. Will go anywhere. Age 33; married. Good references.

549 **Hosiery Superintendent.** Now employed in a first-class mill; wishes to change. Don't want a position in the Southern States or Canada. Has started five new knitting mills during the past ten years. Is an American, 31 years of age and married. Familiar with all kinds of machinery and has first-class references.

1192 **Worsted Steam Dresser** wants position as overseer. Has worked in some of the best mills in England and America. Has high references; age 36; married. Has a thorough knowledge of both plain and fancy work.

1087 **Overseer of Beaming, Designing or Weaving.** 35 years of age. Married. Has worked on dress goods, silk striped shirtings, pantaloon goods, ginghams, etc. Highly recommended. Will go anywhere in the United States.

1157 Wants position. Has a general knowledge of all departments in a cotton mill, and can fill most any position. Has highest of references; age 26, married.

1151 **Asst. Superintendent or Designer** wants position. Age 33; married. Worked on cloakings, fancy worsteds, cheviots, dress goods and cassimeres. Can refer to past employers.

1137 **A Salesman for an Underwear** Mill. Would prefer the account of some large underwear mill exclusively. Salary or commission. Is an experienced salesman and with 9 years practice in the manufacture of knit underwear.

1205 **Designer, Woolen,** wants position. Age 30 and married. Refers to some of the best men and mills. Prefers a position in Mass., R. I., Conn., Penn. or N. Y. Experienced on plain and fancy woolens and worsteds, cheviots, cassimeres and fancy tweeds.

1206 **A Young Man,** 27 years of age, who has had ten years' experience in a bleaching department, desires a position. Can bleach for dyed or white work from the caustic soda or lime formulæ. Can furnish reference as to workmanship, character and sobriety.

1155 **Wool Sorter.** Understands grading all sorts of wool. 24 years of age, and single. Will go anywhere, excepting Western States. Can take position at once.

1202 **Silk Superintendent** is open for an engagement with a first-class company. Has a thorough knowledge of all the details connected with the manufacturing of silk ribbons and hat bands, from throwing to the finished product. Has held the position of superintendent of a first-class mill for several years. Under 30 years of age, and married. Has the best of references. For any further information address this paper.

1134 Position wanted as designer or assistant superintendent by young man, graduate of the Philadelphia Textile School; now employed. High references.

1142 Position wanted as assistant superintendent or designer in woolen mill (N. E states preferably), by young man 26 years of age, of several years mill experience and a graduate of the Philadelphia Textile School. The salary expected would be small to begin with, as a start is the chief object at present.

1193 **Designer,** with a long experience on worsteds, silk, etc. A competent reliable man. Refers to past employers.

1119 **Salesman,** wants position selling dyestuffs. Is a thoroughly posted man in this line; can refer to past employers. Will go anywhere. Age 41 and married.

1124 **Bleacher** wants position. Age 50; married. Has been employed in a first class bleachery for several years, and can furnish good references. Will go anywhere. Wages moderate.

533 **Situation wanted** as superintendent in flax, hemp or jute mill. Can make all kinds of yarn, threads, sail twines. Best of references as to character and ability. Twenty years experience in the same line, both wet and dry spinning.

1144 **Salesman** wants position as traveling salesman for dyestuffs, mill supplies, oils, etc., in which line he has had a good experience. Has first-class letters of recommendation from past employers, and others; age 45; widower.

1141 **Overseer of Wool Sorting** wants position. Understands sorting and grading in all its branches; 20 years experience as boss sorter. Can give the best of references from past and present employers. Is a good judge of the shrinkage of wool, and understands the selection of wool in market for mill. Has six workers in family.

Continued from page 110.

Mr. James F. Powers, Master Mechanic for the Pierce Mfg. Co., of New Bedford, Mass., and Miss Catharine E. O'Neil; they have gone on their wedding tour to Washington and other places.

Mr. Chester Clark, a son of J. A. A. W. Clark, of the Globe Cotton Mills, Augusta, Ga., and Miss Charlotte Butt of the same city.

Deaths.

Albert Ring, at Auburn, Maine, formerly overseer of spinning in the Hill Mill, of Lewiston, Maine, and recently with the Barker Mill, of Auburn, Maine.

Mr. Chas. E. Hawes, retired manufacturer of New Bedford and Fall River, Mass.

Mr. James Jackson, 82, at Providence, R. I., for many years master mechanic at Mauchaug, Mass.

John Heywood, an employee in the weaving department of the Harmony Mills, of Cohoes, N. Y.

John Smith, at Cohoes, N. Y., formerly with the Enterprise Mill, but more recently at the Granite Mill.

John Kerrigan, at Monson, Mass., was employed in the Plunkett Mills for thirty years or more.

Peter Morin, employed in the Farwell Woolen Mills, Lisbon, Maine.

William Whitaker, aged 55 years, at Philadelphia. Deceased was a member of the firm of Wm. Whitaker & Sons.

E. M. Holt, Burlington, N. C.; was a leading manufacturer in the Southern States. Seven sons, all leading cotton mill men, survive him.

David A. Grover, for 25 years master mechanic in the Hamilton Woolen Mill, at Globe Village, Mass.

Mr. Charles Ellis, senior member of the firm of Charles Ellis & Son, of Savannah, Ga., deceased was a native of West Dedham, Mass., who emigrated south many years ago.

Mr. Isaac V. Bardin, senior member of the cotton house of Bardin & Murdoch, Charleston, S. C.

Mr. Benjamin J. Wilson, of Newark, Ohio, at one time a manufacturer of woolen goods at the above place.

Mr. John W. Dobson, yarn manufacturer in the Keystone Mills, of Manayunk, Philadelphia, Penn. Mr. Dobson was a member of the old firm of Schofield & Dobson, which was dissolved some time ago.

David Linn Coyle, for many years a dealer in cordage on Commercial Street, above Fourth Street, Philadelphia, Penn.

—The Japanese are learning to discriminate in the matter of cotton. They formerly used the India product exclusively. Now they prefer Egyptian and American cotton; and they find that among the latter there is a difference in the products of different states. The Japanese minister to Washington has been in Texas looking into the conditions of the cotton trade there, to report to his government. The Texas staple, he says, is preferred above all others by the Jap weavers, for some lines of goods, because of its length and strength. The presence of Japanese buyers in our Southern cotton exchanges in another indication of that nation's open-eyed progressiveness.

WANTED!

Superintendent for a large weaving mill, on medium and fine grades of men's wear. Address P. 152, Textile World, telling fully of ability, experience, positions, references, compensation, age, etc. Correspondence confidential. Applications are also invited for a designer's position in same mill. Must be competent to do high class original work.

WANTED:

A MAN thoroughly familiar with the manufacture of silk twist; also silk, worsted, mohair and cotton braids of every description. Must be good designer and thoroughly familiar with the trade. Address, BRAIDS, Care Textile World.

FOR SALE, SECOND-HAND MACHINERY.

Double Corliss Engine, cylinder 23x60 in. Single Corliss Engine, cylinder 20x48 in. Singles Corliss Engine, cylinder 16x36 in. Single Corliss Engine, cylinder 12x24 in. 30-40 50-80 and 100 H. P. Automatic Engines.

Large stock of Plain Slide Valve Engines, Boilers, Steam Pumps, Feed Water Heaters, Lathes, Planers, Shapers, Drill Presses, Milling Machines, Electric Motors and Dynamos, and Wood-working Machines. Let me know your wants as my stock is constantly changing. Yours respectfully, FRANK TOOMEY, 131 No. 3rd St., Philadelphia.

WANTED: Desirable Accounts

One of the largest Importing and Commission Houses wants desirable Domestic and Foreign accounts. Interview or correspondence with mill owners or salesmen controlling same desired.

Address: L. W. L., TEXTILE WORLD.

Designer Wanted.

Designer of fancy cotton shirtings and cotton dress goods. Must be capable of original and artistic work in novelties. Applications to receive attention should contain full particulars as to qualifications, compensation and references; and will, if desired, be considered confidential.

Address, P 151, Textile World.

"Dixie." The Southern Industrial Journal, tells the truth about Southern conditions and possibilities. If you are interested, send 25 cents for 3 months or $1 per year. THE "DIXIE" CO., Atlanta, Ga.

F. H. POWNALL IRON WORKS,
Jamesburg, N. J.
Steam Hosiery Presses a Specialty.
Also HOSIERY DRYERS. Write for bottom prices.

Knitting Mill Wanted!

The town of Lyndonville, Vermont, has peculiar advantages for a Knitting Mill, viz:

SPLENDID POWER,—Water (850 H.P.), Electric.
BEST HELP (native) at reasonable wages.
GOOD FREIGHT and shipping facilities on B. & M. R. R.

The townspeople are progressive and willing to encourage legitimate enterprises. The town has electric lights and water. It is a fine location for a wood-working establishment. Plenty of hard wood cheap.

Write to the BOARD OF TRADE,
Lyndonville, Vt.

LYNDONVILLE,
VERMONT.

FREE SITES
FOR
COTTON MILLS

Along the line of the Illinois Central Railroad Co. in West Tennessee, Mississippi and Louisiana are offered with cheap fuel, low-priced American labor, best of freight facilities, and, in many locations, exemption from taxation for ten years, with liberal subscriptions to stock, if desired.

Write for pamphlet "One Hundred Cities and Towns Wanting Industries," which gives in a nut-shell statistics of desirable places. The undersigned solicits and will treat in confidence all correspondence with those prospecting for new locations.

GEORGE C. POWER,
Industrial Commissioner, I. C. R. R. Co.,
506 Central Station, CHICAGO, ILL.

ESTABLISHED 1869.
JAMES BOWER'S SONS, Ltd.
Manufacturers of
ALL GRADES AND COLORS OF
Wool Shoddies and Worsted Waste,
CHESTER, PA.
Capacity One Million pounds per year

FACTORY SITES
FOR SALE
in the fast growing village of
DOLGEVILLE, - N. Y.
Water unexcelled for Wool Washing.
Power furnished at very low price.
Good Locations along Railroad.
Best Shipping Facilities.
FOR PARTICULARS ADDRESS
ALFRED DOLGE, Dolgeville, N. Y

Established 1844.
BENJ. BUCKLEY'S SON,
(WM. J. BUCKLEY)
GUN MILL, PATTERSON, N. J.
Manufacturer of all kinds of
SPINDLES, FLYERS, RINGS, TUBES, CAPS, &C.
FOR
Cotton, Silk, Flax, Woolen and Worsted
MACHINERY.
Roving Spindles and Flyers a Specialty.
Light Forgings. Repairing of all kinds.

Assignee's Sale.

PEARCE, ATKINS & CO.,
CINCINNATI, O.

Manufacturers of cotton belting, back-bands, girth webs, surcingles, halters, sash-cord, bell-cord, bicycle cord, clothes lines, plow-lines, etc.

ESTABLISHED IN 1876.

By order of the Court of Insolvency of Hamilton County, Ohio, the undersigned invites bids for the entire property and business of said firm, as a whole (less cash and merchandise on hand, accounts and bills receivable), or separate bids for any lot of their property as described hereinafter, viz:

1. FACTORY.

Four-story brick building substantially built in 1880 expressly for this business, but suitable for any manufacturing, covering lot 70 by 90 at northeast corner of Plum and Charles streets, Cincinnati, O., and two-story brick building, built in 1890, covering adjoining lot 29 by 90; said lots being leased perpetually at the low rental of $594 per annum, taxes and assessments, with privilege of purchase at $11,880.00. Leasehold and factory, including boiler and engine, heating apparatus and elevator, appraised at.....$31,720.

2. OTHER REAL ESTATE.

One lot 50 by 90, at the southeast corner of Twelfth and Plum streets, lying immediately north of the factory, with ten-foot alley between, appraised at....$15,000.

Leasehold of lot 25 by 90, on south side of Twelfth street, adjoining the above on the east, leased perpetually at an annual rental of $250, with privilege of purchase at $5,000. Leasehold appraised at.....$1,875

3. WEAVING MACHINERY.

71 Knowles, Lyall, Gilbert and Mason, belting, back-band and web looms (254 shuttles), with beams, spoolers, bobbins, shafting, hangers, couplings and belting, all complete and in first-class order, and machinery for preparing "Triumph Belting," appraised at.....$35,318.

4. BRAIDING MACHINERY.

166 Braiders for sash-cord, bell-cord, bicycle cord, clothes-lines, plow-lines, torch-wick, etc., all complete and in first-class order, with beams, shuttles, bobbins, singeing and winding machines, spoolers, twisters, shafting, pulleys, belting, lathes and tools, appraised at.....$32,797.

5 MISCELLANEOUS MACHINERY.

Warpers, spoolers, speeders, twisters, sewing machines, creasing, splitting clamping, cutting and winding machines, presses, patterns, platform scales, bobbins, safe, etc., appraised at.....$10,986

6. SPINNING AND CARDING MACHINERY.

7 "Whitin" and other spinning frames (924 spindles), 18 carding machines, card grinder, speeder, balling machine, etc., appraised at $4,191

The purchaser of the whole will be entitled to the good will of the business and all finished contracts at the date of transfer, and can purchase the merchandise left in the hands of the assignee at a reasonable valuation.

The undersigned also invite bids for the following described property belonging to

HENRY PEARCE'S SONS, viz.:

1. REAL ESTATE.

Lot No. 23 as numbered and described on the plat of the Idlewild Syndicate Subdivision, recorded in Plat Book 7, page 8, 50 by 140 on southeast side of Brooks avenue, lying 250 feet north of Kerper avenue, appraised at $1,000

Frame stable on leased lot on Butler street, appraised at.....$200.

2. MACHINERY.

Three spinning frames, speeders, formers, spoolers, twisters, braiders, etc., appraised at $2,787

3. OFFICE FURNITURE.

Safes, desks, tables, chairs, wardrobe, scales, stoves, etc., appraised at.....$416.

4. HORSES, DRAYS, ETC.

Appraised at $349.50

DEER CREEK MANUFACTURING COMPANY STOCK.

The undersigned also invites bids for 573 shares out of 2000 shares of the capital stock (par value $100 per share) of the Deer Creek Manufacturing Company, which owns the five-story brick mill covering lot 70 by 218, at the corner of Fifth and Eggleston avenue, Cincinnati, Ohio, and the boilers, engine, lapping, carding, spinning, warping, dyeing, braiding, spooling, twisting and other machinery for making cotton warps, yarns, rope, twines, shade cord, trotlines, wicking, etc. Bids may be made for any number of shares not exceeding 573. This stock has been appraised at 90 cents on the dollar, or a total of.....$51,570.

Bids must be sealed and enclosed in a separate envelope addressed to the undersigned, and must be in his hands before noon on Wednesday, April 21, 1897. Bids for less than $10,000 must be accompanied by certified checks for 10 per cent of the amount bid. Bids for $10,000 or more must be accompanied by certified check for $1,000. The Court reserves the right to reject any or all bids. If any bid is rejected the accompanying check will be returned. For terms of payment, further information and permits to see mills or machinery, etc., address or apply to

WILLIAM C. COCHRAN, Assignee,

Nos. 313 and 314 Johnston Building, **Cincinnati, Ohio.**

THE TEXTILE WORLD'S DIRECTORY of the TRADE

This directory will be published for 1897 in one volume of convenient size, in response to the demand that the sectional directories heretofore published quarterly, should appear under one cover. The same general style which has characterized the quarterly issues will be preserved. The map features which have proved so popular will be retained, and improvement made wherever opportunity occurs.

What it will Contain:

A complete directory of textile establishments of the United States, including cotton mills, woolen mills, knitting mills, silk mills, flax mills, jute mills, dye works, print works, bleacheries

Detailed information will be given about each establishment, viz., the name of the company or firm, names of officers, agent, superintendent, what the mill makes, number sets of cards and combs (if woolen), number of spindles, number of looms, whether steam or water power, whether a dye house or not, who the selling agents are, or if the mill sells direct. In many instances it gives the name of the buyer of raw materials and supplies. To the travelling man, this directory is invaluable, as the maps give the location of the towns where there are mills, so that trips may be planned. The railroad connections are given, and distances may be estimated accurately from the maps.

Carefully Prepared Lists!

Besides the complete information concerning the mills outlined above, this directory will also contain carefully prepared lists of:

Dry goods commission merchants in the principal cities.
Dealers in raw materials in the principal cities.
Lists of manufacturing clothiers.
Lists of suit and cloak makers.
Lists of principal jobbers and large retailers, and
Other buyers from first hands. These latter lists will be invaluable to textile manufacturers and sellers of textile fabrics.

Supplemented from Month to Month!

This directory will be supplemented from month to month by the reports in the TEXTILE WORLD, and six months after its publication, a special statistical issue of the TEXTILE WORLD will contain supplementary data accrued in that time.

A Book of Over 300 Pages!

The annual directory will not be one of the regular issues of the TEXTILE WORLD, but a separate publication, containing upwards of 300 pages. It is carefully compiled by the TEXTILE WORLD'S Staff from **entirely independent personal investigation and reports.**

This complete directory will be sent free to every paid up subscriber to the TEXTILE WORLD at time of publication, and it will be included in the regular subscription price, which will be unchanged, viz., $2.00 per year. (It will also be sent to others, as per prospectus in return for courtesy in furnishing information; also to advertisers.)

It is not the present intention of the publishers to sell the directory separately from the TEXTILE WORLD, or at least, if so, the price will not be less than the yearly subscription price to the TEXTILE WORLD, viz., $2.00. There will in all probability be a certain number of copies with special bindings, for which the price, including the TEXTILE WORLD, will be $3.00. The work of compilation is now actively going forward, and the directory will be issued early in the year.

For accuracy, convenience of arrangement and value of contents, every effort will be made to make it

Superior to any Directory published, regardless of price.

Free to paid-up Subscribers!

Capital, $1,200,000.

100,000 SPINDLES.
Weekly Product 120,000 lbs.
14's to 160's.

HIGH GRADE

Cotton Yarns,

SPECIALLY ADAPTED FOR

Silk, Plush, Upholstery & Hosiery

MANUFACTURERS.

American Peelers. Sea Island. Egyptian Cottons.

Superior Qualities Combed and Carded—Furnished in singles, 2, 3, 4 and 6-ply Main warps, skeins, beams, spools, tubes, cones and Lisle Thread yarns.

Cops for Weaving and Twisting. Cops for Hosiery.

GLOBE YARN MILLS,

Fall River, Mass.

E. B. JENNINGS, - - Treasurer.

Arnold B. Sanford, *Pres.* Arthur H. Mason, *Treas*
Capital Stock, $500,000.

Sanford Spinning Co

FALL RIVER, MASS.

30,000 Spindles. Weekly product, 50,000 pounds 14s to 40s.

NOVELTY COTTON YARNS,

FROM AMERICAN PEELERS AND EGYPTIAN COTTONS.

OUR SPECIALTY: Superior qualities of Hosiery Yarns, Natural Shades of Cottons, and in Colors, Jaegers, Mixes, and Bleached, Hosiery Cops on Long Tubes, Skeins, Tubes, Cones and Lisle Thread Yarns. Furnished in Carded and Combed Qualities in Singles, 2, 3 and 4-plies.

YARN DEPARTMENT.

Eastern Yarn Market.

Worsted Yarn. In fine worsted yarns there is little business doing. Many of the weavers have placed orders for future use, and those with capital have purchased a good supply of yarn which will last for at least six months. There is a fair demand for cheviot worsted cloth, and also dress goods. Some of the Rockville mills are busy, but the majority are still on short time. There have been, of late, more buyers in New York from the West than has been the case for the last four or five years. The purchases have all been on the cheaper class of goods and those kinds not requiring worsted yarn. Worsted fancy men's wear mills are getting but a comparatively small amount of the business. The clothiers will not buy worsted cloth because the demand is all for cheap cloths, and worsted cloth is out of the reach for the average man, to-day. Some of the worsted weaving mills are running extensively on cotton and worsted union goods, requiring but a small amount of worsted yarn. The mills spinning their own worsted yarn and weaving it into cloth, are getting the business on all worsted cloth at this time, and it will always be so until an equitable tariff is arranged.

The Ways and Means Committee assure weavers that they can expect but a duty of 50 per cent. on cloth, and there is to be no divisionable lines. The Ways and Means Committee are not now on the wool and woolen schedule, and it will be the last schedule arranged. Prices for yarn continue firm with few orders being placed. Spinning mills buying tops and manufacturing yarn therefrom are offering yarn cheaper than many of the large spinning mills. The tariff controversy is the centre of attraction at this time. There is a difference of views between the spinner and the weaver, and then, again, there is a difference between the spinner and weaver and knitter, against the excessive demands of the wool grower. All are crying for lower duty on the other fellow's commodity. Some say that the McKinley act is to be re-enacted. It is to be hoped this is not so, for it is short-sighted at best, and will result in a Republican defeat. Give each a fair chance on a moderate basis, and the manufacturers and the people will be satisfied. Many of the mills will be running on heavy weights by April, and a fair amount of business will be secured. Wool tops can be purchased in Europe for nearly the same price as wool.

Woolen Yarn. Spinners are securing orders for future deliveries, as weavers and knitters realize the importance of placing orders before the advance in wool becomes too great. The domestic market has advanced. The foreign wool market, while firm, has not advanced materially. In many instances yarn can be purchased lower than has been the case for some time. The cheaper and low grades of yarn are selling best. The demand is for cheap yarn. The knitters of fine underwear are getting but few orders, but next month a change for the better is anticipated. The orders are all coming from the West. It seems strange that with a certainty of duty on wool that buyers of underwear and cloth of fair value are keeping out of the market. They say if the market advances they will pay the advance. The buyers have had so many "snaps" that when a chance comes for good bargains they are slow to avail themselves of it. We note that the strike at the Victor Knitting Mills, Cohoes, is over. Many of the knitters who have been idle are about to start

Continued on page 131.

Frank E. Patterson, Prest. Oscar W. Wood, Treas

GERMANTOWN SPINNING COMPANY INCORPORATED GERMANTOWN JAN. 9TH. 1890

Germantown Spinning Co.

COTTON CARDED

HOSIERY YARNS

In numbers from 6s to 26s.

Germantown, Philadelphia.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. E. J. CARRIGAN, Sec.

Established 1860.—Incorporated 1893.

THE S. BLAISDELL JR., CO.,

Egyptian COTTON Peruvian

American Long Staple a Specialty. and all American Southern points.

Shipments direct to mill form Egypt, Peru

CHICOPEE, MASS.

Established 1865.

H. M. WITTER & COMPANY,

Manufacturers of

COTTON WEBBING, TAPES AND BINDINGS,

Worcester, Mass.

WEAVING and HOSIERY YARNS.

We Buy for Cash

WARPS, COPS, TWIST and SOFT SKEINS, Single, Double, 3-ply, 4-ply, etc.

COLORED YARNS for HOSIERY

on Cones, a Specialty.

Correspondence Solicited.

EDWARD S. HYDE, 223 and 225 Chestnut Street, PHILADELPHIA PA.

W. WARREN THREAD WORKS,

Manufacturers and Importers of

Polished Threads and Cotton Yarns,

WESTFIELD, MASS.

Colored Yarns and Threads on cones a specialty. We manufacture spool cotton, sewing thread, button-hole cord and seaming thread put up in any form to suit the trade. Samples sent upon application and correspondence solicited.

Our Bleaching and Dyeing facilities are New and Unsurpassed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade.

PAWTUCKET, R.I.

Continued from page 129.

on full time. The knitters are fighting hard against prohibitive duties on thread waste, ring waste, noils, slubbing waste, etc. Some knitters insist that 5 cents per pound is high enough for thread and ring wastes, and on noils and slubbing waste, 10 cents. Amsterdam is very busy on a cheap line of coarse underwear.

WORSTED YARN.

Fine Australian.
2/40s . . . . . 74 cts.
Other numbers in proportion.
2/50s . . . . . 79 cts.
Half-blood domestic.
2/40s . . . . 68-72 cts.

DOMESTIC.

1/4 Blood,
2/28s, 24s, 18s . . 52 cts.
2/32s . . . . . 54 cts.
3/8 Blood,
2/32s . . . . . 59 cts.
2/28s, 24s . . . . 59 cts.
1/2 Blood,
2/22s, 28s . . . . 51 cts.

Cotton Yarn. Spinners are securing orders at prices which are very low. Each salesman has a lower price than his competitor. The motto seems to be any price for an order. We have noted some orders placed on carded Egyptian yarn, in 10s, at 15 cents, and from some of the largest and best mills in the country. The knitters of ribbed underwear are beginning to get orders. The white, cheap ribbed underwear is selling best. We believe some orders will be placed for silver gray cotton yarn later. The salesmen are all out working for orders, and are meeting with success. We believe that within this month all the mills will be fully under way, and orders on all kinds of yarn will be freely placed. Many of the spinners have cotton purchased at a higher price than it can be bought today, and naturally they are loth to make a loss by selling the yarn at a price based on the price of cotton today. We know of several instances of this kind. There really is not much inducement for knitters to purchase heav-

Continued on page 133.

SAWYER, MANNING & CO.
YARNS,
86 & 88 Franklin St., NEW YORK

ALEX'R KING & CO.
YARNS.
FINE IMPORTED YARNS A SPECIALTY
54 Leonard St., New York.

JAMES E. MITCHELL & CO.,
Commission Merchants.
122 & 124 Chestnut St., Philadelpia, Pa.
51 & 53 Summer St., Boston.
Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

O. S. HAWES & BRO.,
WEAVING and HOSIERY YARNS,
All Plies and Numbers.
Imported Yarns a Specialty.
82 and 84 BEDFORD ST., FALL RIVER, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON
YARNS AND WARPS
40s and above.
FITCHBURG, MASS.

YARNS All Numbers and Qualities.
HOLLAND & WEBB,
478 Broadway, New York.

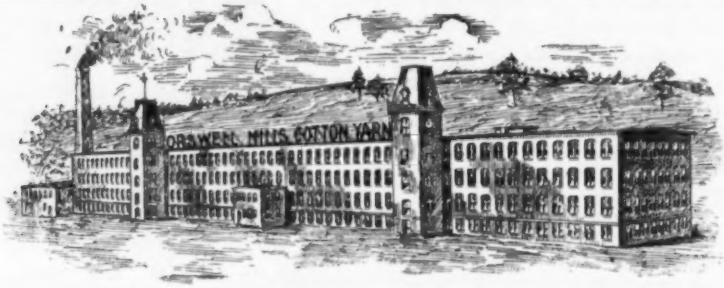
TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

TRENTON WORSTED MILLS,
Trenton, N. J.
Manufacturers of
All Numbers of Worsted Yarns.
Knitting and Floss Yarns a Specialty.
A. FOSTER, Superintendent.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

YARNS

SOLIS - - BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

Cotton Yarns AND WARPS Of Every Description.

James F. White & Co.
COMMISSION MERCHANTS,
54 an 56 Worth St., NEW YORK.
228 Chestnut St., PHILADELPHIA.

BURLAPS all WIDTHS and WEIGHTS.

MONUMENT MILLS,
Manufacturers of
White, Colored, Fancy and Double and Twist,
COTTON WARPS
HOUSATONIC, MASS. 4s to 60s.

Hosiery AND Weaving Yarn

ALBERT IVINS CROLL, BOSTON

THE WILMINGTON MILLS MFG. CO.
MANUFACTURERS OF
JUTE GOODS,
CARPET FILLING AND RUG YARNS,
Wrapping, Baling, Tobacco, Hop and Wool Twines. Cords, Ropes, Packing and Specialties
WILMINGTON, DEL.

GLUTROSE.

Glutrose Sizing will effect a saving of 25% to 30% of flour or starch.

Glutrose Sizing will penetrate the goods better, go farther and finish better than anything else, adding much to the strength, stiffness and lustre of the goods.

Glutrose Sizing has no offensive odor, and goods prepared with it will retain their condition better under severe climatic changes.

Glutrose is a neutral compound and will not injure colors.

Manufactured solely by AMERICAN GLUTROSE WORKS,
Office, Penn Mutual Building, - 925 Chestnut Street, - PHILADELPHIA, PA.

Continued from page 131.

ily of yarn, as each turn of the market brings lower priced cotton. The heavy weight shirts are opening up late in the market. The light weight, fine underwear continues to hold out, and a late season is anticipated. Specialties are selling fairly well. Combed Egyptian yarn in fine numbers is in fair demand. Hosiery is selling fairly well in full fashioned goods. We note one mill of good capacity which is running until 9 o'clock at night and is making money. The rubber boot lining trade is dull. The S. Fitch Manufacturing Co. has gone out of business. This product out of the market should enable other mills a fair chance of many orders. This trade will not start much before April and May. It is said by the mills that orders for knit goods come spasmodically. In some instances manufacturers think they are going to receive no orders of a given kind, and of a sudden they receive more orders than they have at any previous time. Buyers seem to have adopted the hand-to-mouth buying. Stocks are all reduced and prices continue low. On the present market there is very little to report, from the fact that the business that is secured is fought for so hard that little note is made of it. To sum the situation up one might say that there is a bad state of affairs, plenty of prospect, but very little actual results.

DOUBLE ROVING WHITE COP YARN.

11s and 12s	14 cts.
16s	15 cts.
20s	18 cts.

Jaeger and Camel's Hair.

10s to 12s	16 cts.

Cones 1 cent extra.

Other colors quoted on application.

Egyptian Combed.

1/10s to 12s	27 cts.
1/20s	28 cts.
1/34s	31 cts.
1/40s	32 cts.
1/45s to 1/50s	37 cts.

Cones extra price.

ALLEN SEED COMBED.

1/10s	24 cts.
1/40s	32 cts.
2/40s	37 cts.

Carded Egyptian.

1/20s	21¾ cts.

KERR THREAD CO.
—SPINNERS OF—
Fine Combed Sea Island **COP SINGLES**
All Numbers, 30s to 150s.
Fall River. Mass.

J. D. KENNEDY, Lessee
North Athens Cotton Mills,
Manufacturer of
COTTON WARPS AND YARNS
in numbers from 4s to 14s.
ATHENS, - - TENN.

ABEGG & RUSCH,
WORSTED YARNS
Dry Spun. Nos. 36s to 100s.
COTTON YARNS
Nos. 12s to 120s.
92 GRAND ST., NEW YORK.

WOOLEN YARNS.
All grades Woolen, Mixed and Merino yarns.
15 SETS CARDS.
EDWARD M. ROCKWELL,
LEOMINSTER, - MASS.

A. HERBST. J. W. JONES.
HERBST & JONES,
Successors to Kershaw Worsted Co.
WORSTED YARN SPINNERS,
21st & Naudain Streets,
PHILADELPHIA.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

EICHMANN & STERNBERG
488-492 Broadway, NEW YORK.
COTTON WOOL SILK **YARNS** For Weaving Knitting or Embroidering.
HARNESS TWINES.

WOOLEN AND MERINO
YARNS. Special line for Bicycle and Golf Goods in all shades
For Hosiery, Gloves, Underwear, and all kinds Knit Goods. Cop, Cone and Skeins.
The J. & H. Clasgens Co.
New Richmond, O.

HADLEY
SPOOL COTTON AND FINE YARNS
COMPANY
COTTON SPINNERS.
MILLS AT HOLYOKE, MASS.

SPINNERS OF
FINE COTTON YARNS
30s TO 100s.
Gray, Bleached, or Colored. On cop, in skein on spools, cones or tubes.
Fine Cotton Warps, single and two-ply, in chain, etc.
95 Milk Street, BOSTON.

THE WILLIAM CLARK COMPANY,
WESTERLY, R. I.
Mills equipped with the latest and most improved machinery.
Combed Egyptian from No. 20s to 100s. Combed Sea Island from No. 40s to 200s.
Also 2, 3, 4, 5 ply and 6, 9 and 12 plv cable laid.
Hosiery Yarns on Cops Tubes or in Skeins, Grey, Bleached or Dyed. (Fast Colors.

The J. R. Montgomery Co.,
WINDSOR LOCKS, CONN.,
MANUFACTURE
LOOP OR BOUCLE YARNS, in Mohair and Worsteds.
COTTON SPIRAL OR LENO YARNS, to give leno effects with plain weave.
COTTON FLAKE OR KNOP YARNS for new effect in Cotton dress goods.
HIGH GRADE COTTON WARPS.
Also printers of Cotton, Wool or Silk Yarns.

MALCOLM MILLS CO.,
MANUFACTURERS OF
Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.
Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

Cotton Warps.
WHITTIER COTTON MILLS,
LOWELL, MASS.

THEO. A. DUROSS, Wool Sorter and Scourer.
Having doubled my former capacity, I am now prepared to scour the largest lots in the quickest possible time. Especial attention given to western shippers. All wools covered by insurance while in my possession. I deliver wool free of charge in Philadelphia. Immediate returns made on sample tests. All wools dried by cold air draft. Best of References. Correspondence Solicited.
Kensington Ave. and Huntingdon St., - PHILADELPHIA, PA.
Represented by S. MARTIN HENRY.

"Get Our Prices."
T. BROPHY'S SONS,
DYERS OF ALL KINDS OF YARN AND COTTON WARPS.
KENSINGTON DYE WORKS.
Jasper Street, above Clearfield Street,
PHILADELPHIA.

FAST FANCY COLORS.
We make a specialty of dyeing Mode and Tan shade on hosiery and yarns, as also all other fancy shades. Colors absolutely fast. For particulars address
OAKDALE DYE WORKS,
913 W. York St., Philadelphia, Pa.

Philadelphia Yarn Market.

There have been some changes in the prices of yarns the past month, but the most of them with a downward tendency. Warp mills have been well sold up. Business seems to be improving generally. Orders on hosiery yarns, however, have been taken at very low prices, and there has been considerable pressure to sell especially in the lower qualities. Some of the best mills have, however, met the market at very low figures for better quality yarns. The recent advance in cotton is making a stronger feeling to-day in the yarn market.

It is difficult to make the quotations exact as many Southern mills are now making hosiery yarns that compete strongly with Eastern yarns, and they are obtaining prices very nearly equal to those for Eastern yarns, while some are obliged to sell, on account of quality, at figures below quotations.

We quote:

WARPS.

20/1	12½ to 13 cts.
22/1	13 to 13¼ cts.
26/1	13 to 13½ cts.
12/2	12½ to 13 cts.
14/2	12½ to 13 cts.
30/2 Eastern	17½ to 18 cts.
30/2 Southern	16½ cts.
30/1 Southern	14½ to 15½ cts.
30/1 Eastern	17½ to 18 cts.
14/1 Southern	12½ cts.
16/1	12½ to 13 cts.

SKEINS.

26/1 soft	12½ to 13 cts.
20/1 "	12½ to 13 cts.
19/1 "	12½ to 13 cts.
4s to 10s soft	11½ to 12 cts.
10s to 12s hard	11½ cts.
12s soft	12 cts.
14s "	12 to 12½ cts.
20/2 medium	13 to 13½ cts.
16/1 soft	12½ cts.
14/2 hard	12 cts.

SOUTHERN CONES.

6s to 8s	12 cts.
10s	12 to 12½ cts.
12s	12½ to 13 cts.
14s	13 cts.
16s	13 to 13½ cts.
20s	15 to 15½ cts.
24s	15½ to 16½ cts.
26s	15½ to 16½ cts.

SOUTHERN COPS.

6s to 8s	12 cts.
10s	12 cts.
12s	12 to 12½ cts.
16s	13 to 13½ cts.
10s to 12s shuttle	12 to 12½ cts.
6s to 8s shuttle	12 cts.

Continued on page 137.

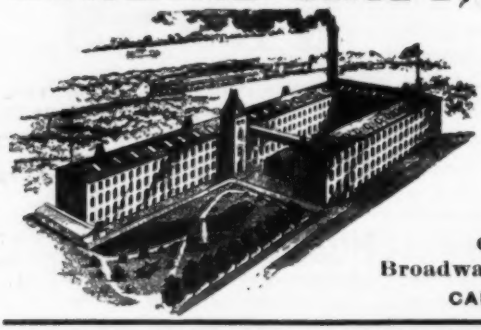
O. H. SAMPSON & CO.,
YARNS,
BOSTON, 67 Chauncy St.
NEW YORK, 58 & 60 Worth St.
PHILA. 206 Chestnut St.

Cohannet Mills,
TAUNTON, MASS.
Spinners of High Grade
HOSIERY YARNS OF EVERY DESCRIPTION.
Selling Agents JAMES E. MITCHELL & CO., Philadelphia and Boston.

B. F. BOYER & CO.,
Successors to GEORGE SHIMER & BOYER,
HOSIERY YARNS,
In Wool, Merino and Worsted.
GOLF YARNS,
In Wool and Worsted. Also carry a full line
BUNDLE YARNS
For the Jobbing Trade.
516 Market St., Philadelphia.
MILLS, CAMDEN, N. J.

PORTER BROTHERS & COMPANY
Commission Merchants,
Trimmings, Buttons and Knit Underwear.
Sole Agents for
John Paton, Son & Co.,
OF ALLOA, SCOTLAND.
Specialties:
SCOTCH MIXTURES
For Sweaters, Golf and Bicycle Hose, Mitts, Gloves, etc.
78 & 80 Worth St., New York.
72-82 Lincoln St., Boston.

HOWLAND CROFT, SONS & CO.



LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:
Broadway and Jefferson Avenue,
CAMDEN, NEW JERSEY.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

The Competition of Foreign Goods

On staple and plain fabrics under present tariff conditions makes it almost impossible to make any money, and the only hope of profit in making Dress Goods, Cloakings and Cassimeres seems to be in using

MOHAIR OR NOVELTY YARNS.

In the United States we are the only manufacturers from raw materials to finished product who make such yarns ONLY. Perhaps we can be of use to you.

CRANSTON WORSTED MILLS, Bristol, R. I.

George Campbell & Co.

Worsted Spinners.

Yarns, both French System and Bradford.

Knitting Yarns in all Grades and Mixes.
All Numbers to 60s.

21ST STREET AND WASHINGTON AVENUE. PHILADELPHIA.

RIVER SPINNING COMPANY,

WOONSOCKET, R. I.

Belgian System WOOLEN and MERINO **Yarns.**

In any shade or quality suitable for making any class of Goods, domestic or foreign at prices to insure competition with imported goods of any description.

Selling Agents: JOHNSON & FARIE. Apply to Andrew Adie, 570 Bourse Building, Philadelphia.

Continued from page 135.

MIXED COLORED CONES.

6s to 8s	14 to 14½ cts.
10s	14 to 14½ cts.
12s	14½ to 15 cts.
14s	15½ to 16½ cts.

SKEIN.

8/3 carpet	11½ cts.
8/3 slack	11½ cts.
9/4 slack	11½ cts.
10s double reeled	12 cts.
16/3 slack	13 to 13½ cts.
16/4 medium	13 to 13½ cts.
2-1/2 to 4s soft	11½ to 12 cts.
8s to 10s "	12 cts.

EASTERN COPS.

26s shuttle	13½ to 14½ cts.
40s "	17 to 18 cts.
12s "	14 cts.
10s hosiery	13 to 13½ cts.
12s "	13½ cts.
16s "	13½ to 14 cts.
20s "	15½ to 16 cts.
24s "	16 to 16½ cts.

Eastern skein, 1-2 c. above cops.

Eastern cones, 1-2 c. to 1 1-2 c. above cops.

Egyptian carded, 4 c. to 5 c. above white.

Egyptian combed, 4 c. to 5 c. above carded.

Wool spun yarns in somewhat better demand, but orders are very slack; deliveries are not at all pressing; prices are maintained because they could not possibly get any lower.

We quote:

20s cut black cops	13 to 13½ cts.
12s " "	12½ cts.
15s " "	12½ cts.
22s " "	14 to 14½ cts.
26s " "	17 to 17½ cts.
18s to 20s white	13½ to 14 cts.

Woolen yarns are very dull; although as the season approaches there is some little demand for samplings which spinners are hoping will result in better business than has prevailed recently, as all spinning mills have been running on very slack time.

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO. 47 LEONARD ST., NEW YORK.

LARGEST IN THE WORLD. ESTABLISHED IN 1870.

THE F. MUHLHAUSER CO.

FINE SHODDIES, CAPACITY: 10,000,000 lbs. per Annum

Rings, Threads, Botany Yarns, Etc.

BRANCH OFFICES: 143 Federal Street, Boston. 7-9 Grand Street, Troy, N. Y. 34 No. Front Street, Philadelphia, Pa.

CLEVELAND, OHIO.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silks for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479, and 481 Broome Street, NEW YORK.
79 Chauncey Street, BOSTON.
186 Franklin Street, CHICAGO

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

Boston Finishing Works

WILLIAMSTOWN, MASS.

BLEACHERS, DYERS AND FINISHERS

Of Pure Finish Shirtings, Sheetings, Canton Flannels and Filled Goods. Also Silesias, Satteens, Corset Jeans, Cambrics, Sleeve Linings, Pocketings, Flanneletts, and all descriptions of Dyed Goods.

NAPPING A SPECIALTY.

Being equipped with the French and other Foreign and Domestic Napping Machines, we are prepared to give any kind of Nap required, including the French FlannelFinish.

HOME BLEACH AND DYE WORKS,

PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

PAWTUCKET, R. I.

Pawtucket Dyeing & Bleaching Co.,

BLEACHERS AND DYERS OF

COTTON YARNS AND STOCKINET.

OFFICE WITH BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,
28 BAYLEY ST., PAWTUCKET, R. I.

HERE IT IS!

WHAT? WHY! Just what you have been looking for,

THE GREATEST **Air Mover** on the American Market.

The Berry Wheel,

MANUFACTURED BY

A. HUN BERRY, 23 West First St., BOSTON, Mass.

THIS IS NO NEW THING. It has been fully demonstrated during the past ten years that this Wheel has no equal for moving Air (hot or cold), Smoke, Steam, Dust, Gases, Fumes of Acids, or anything that floats in the air. For Drying all kinds of products, Wool, Cotton, Glue, Yarn, Cloth, Hair, Leather, Book and Leather Board, etc.

BY OUR METHOD of applying this Wheel and handling the Air, we are prepared to remodel any make or kind of Dryers, and guarantee to increase their drying capacity from 25 to 50 per cent.

We have no long list of testimonials to offer. Anyone can get them. **THEY COST NOTHING,** but we can with perfect confidence refer you to **any or all** of our customers.

Mill Ventilation
Drying
Removing Steam } ARE OUR SPECIALTIES.

POSITIVELY this Wheel has no **BACK DRAUGHT,** and is the only Wheel that discharges evenly over the whole surface of the Wheel.

THERE'S ONLY ONE.

M. B. SCHWAB, Pres. D. W. SCHWAB, Sec.
H. RAWITSER, Treas. ED. GLUECK, Gen. Mgr.

Riverdale Woolen Co.,

MANUFACTURERS OF

SHODDIES

OF EVERY DESCRIPTION.

Capacity 7,000,000 pounds per annum.

Custom Carbonizing and Garnetting a Specialty.

RIVERDALE, NORTHBRIDGE, - MASS.

New York Office: 140 Duane Street.

CHAS. J. WEBB & CO.,

Foreign and Domestic

WOOL, HAIR and NOILS,

142, 144 & 152 to 156 N. Front St.,
PHILADELPHIA PA.

JAMES E. DALY

Manufacturer of

WOOL EXTRACTS and SHODDIES,

P. O. Box 395,
Paterson, N. J.

Fancy Colors a Specialty. Long Distance Telephone.

RICHARD T. SULLIVAN,

WOOL EXTRACTS,

And Fine All Wool Shoddies.

NEWTON LOWER FALLS, Mass.
And 155 Federal Street, Boston, Mass.

FOWLES & CO.,

Importers and Dealers

WOOLS, NOILS, HAIR,

Shoddies, Waste, Flocks, Etc.

106 Church St., Philadelphia.

FIRE DEFIED!! By The American Fire-Resisting Paint.

A building protected with these goods becomes practically Fire proof.

An ocular demonstration of the fire resisting qualities of this paint and kalsomine will be given at our office to anyone interested. Samples, and information furnished from those who have used this paint successfully.

THE AMERICAN FIRE-RESISTING PAINT CO., 17 Broadway, New York, N. Y.

FAST COLORS

For Wool, Woolen and Cotton Yarn and Piece Goods Dyeing, and for Calico Printing

ALIZARINE RED, PASTE AND POWDER.

Alizarine Blues, Oranges, Browns, Yellows, Maroon, Gray and Black.
Cœruleine, Galleine, Mythylene Grays.
Thionine Blues, Thionine Indigo, Solid Green and
PATENT BLUES (superseding Extracts of Indigo on account of fastness and color bloom) for Wool and Silk, Benzidine and Primuline Colors, Zinc Dust, Aniline Salts and Oil.

VICTOR KOECHL & CO. 79 MURRAY ST. NEW YORK.

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FARBWERKE, formerly MEISTER, LUCIUS & BRUENING, HOECHST o | M.; A. LEONHARDT & CO., Muehlheim o | M.

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Boston, Mass., 138 Milk St.; Philadelphia, Pa., 39 N. Front St.; Providence, 45 S. Main St.

PROVIDENCE DYE WORKS.

~~~~Dyers and Finishers,~~~~

COTTON YARNS, Suited for HOSIERY and WEAVING Cotton, Woolen and Worsted DRESS GOODS, Woolen and Worsted Mixed CASSIMERES and CLOAKINGS, also Woolen and Worsted Slubbing, COTTON YARN and WARP DYERS and BLEACHERS.

FIRTH & FOSTER CO.,

OFFICES: **Philadelphia, 546 Bourse Building.**
New York Office, Silk Exchange, Broadway and Broome St.
WORKS: **Taylor, Emerald and Adams St., Kensington, Philadelphia, Pa.**

R. GREENWOOD & BAULT,

GLOBE DYE AND BLEACH WORKS,

FRANKFORD, - PHILADELPHIA.

Specialists in Cotton Warps and Skein Dyeing.

BAY STATE DYEING AND FINISHING CO.,

Yarn and Piece Dyeing a Specialty.

NORTH ANDOVER, DEPOT, - - MASS.
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JOHN J. KELLER & CO.,

104 and 106 MURRAY STREET,
NEW YORK.

220 Church St., Philadelphia. 153 Milk St., Boston.

Aniline Colors,
Dyewood Extracts,
Sumac and
Nutgall Extracts.

FAST COLORS for wool dyeing, one dip cotton colors, novelties and specialties for calico printing.

—— MANUFACTURED BY ——

JOHN R. GEIGY & CO., Basle, Switzerland.

WM. J. MATHESON & CO., Ltd.

IMPORTERS AND
MANUFACTURERS OF

DYE STUFFS

New York,
Boston,
Philadelphia,
Providence,
Charlotte, N. C.,
Montreal, Canada.

FARBENFABRIKEN OF ELBERFELD CO.

77 William Street, New York. *16 Hamilton Street, Boston*

11 North Front Street, Phila. *161 Kinzie Street, Chicago.*

Aniline Colors, Alizarine, Dyestuffs.

SOLE IMPORTERS OF THE WELL KNOWN ALIZARINE AND DIRECT DYEING BENZIDINE COLORS.

MANUFACTURED BY

FARBENFABRIKEN, formerly FRIEDR. BAYER & COMPANY, Elberfeld and Barmen, Germany.

Sole Agents of the Hudson River Aniline Color Works, Albany, N. Y

THE STAMFORD MANUFACTURING CO.

MANUFACTURERS OF

CUT and GROUND DYEWOODS,

Dyewood Extracts and Liquors,

FLAVINES.

Importers of CHEMICALS and DYESTUFFS.

133-137 Front Street, - New York.

NEW COLORS FOR COTTON

OF THE

St. Denis Dyestuff and Chemical Co., Paris, France.

VIDAL BLACK for Dyeing. VIDAL BLACK S for Printing.
THIO-CATECHINE for Dyeing. THIO-CATECHINE S for Printing.
CACHOU DE LAVAL for Dyeing. CACHOU DE LAVAL S for Printing.
Fast to Light, Soap, Alkali and Acid.

MADRAS BLUE. Dyeing on Sumac and Antimony Mordant. The only perfect Indigo Blue on the market. It dissolves readily, dyes evenly and IS FAST.

Send for product and dyed samples, processes, etc., to

SYKES & STREET,

New York. Boston. Philadelphia.

SOLE U. S. AGENTS.

O. S. JANNEY & CO.

IMPORTERS OF

INDIGO, CUTCH, GAMBIER, SICILY SUMAC, TUMERIC, CHINA CLAY, Etc.

AND DEALERS IN

Dyestuffs, Extracts and Chemicals.

AGENTS FOR

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BALTIMORE CHEMICAL CO., - - - MORDANTS AND COLORS FOR DYERS, CALICO PRINTERS, ETC.
TRELAVER CHINA CLAY AND CHINA STONE WORKS CO., } ENGLAND, CLAYS FOR POTTERS AND
MID CORNWALL CHINA STONE AND CLAY CO., LTD., } PAPER MAKERS.
AMERICAN GLUCOSE CO., BUFFALO, N. Y., - - - - - - CORN STARCH.
SCHILL & SEILACHER, STUTTGART, GERMANY. ANTIMONY SALTS.

No. 70 Kilby St., Boston, Nos. 8 & 10 Letitia St., Phila,

New York and Boston Dyewood Company,

—— MANUFACTURERS OF ——

DYEWOOD EXTRACTS.

Sole Agents for the United States and Canada for

ACTIEN-GESELLSCHAFT FUR ANILIN-FABRIKATION, BERLIN.

Specialties for Wool, Silk and Cotton.

CHROMANIL BROWNS.

New direct dyeing colors of unusual brilliancy and strength, producing fast cutch shades by treatment with Chrome and Bluestone.

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BOSTON: 117 HIGH ST. HAMILTON, ONTARIO.

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ANILINE COLORS.
FAST COLORS FOR WOOL.

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American Aniline Colors

FOR Cotton, Wool and Silk.

THE HANNA-SCHOELLKOPF CO., Philadelphia.

New York. Established 1865. Philadelphia.

ANCHOR COLOR MANUFACTURING CO.,

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ALIZARINE AND MAZARINE COLORS for Wool, Yarn and Piece-Goods.

One-Dip Blacks and One-Dip Blues for Mixed Goods.

Lactic Acid, Alizarine Mordant, Archil Liquor, Cudbear, Extract Indigo, Indigotine'

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462, 464, 466 Cherry Street, New York.

PHILADELPHIA Office: 109 N. Front Street.

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Aniline and Alizarine Colors, Dyestuffs, Chemicals,

ANILINE OILS AND SALTS.

LATEST SPECIALTIES.

Cresylblue, OB pat'd.	For Cotton: absolutely fast to Sunlight.	Thio Versuvine,	BB.	One dip for cotton and mixed goods, wool and cotton silk and cotton.
" BB "		" Brown,	BB.	
" RR "		" Yellow,	R.	
Cresylviolet "		" Orange,	G.	

Naphtazine Blue (Pat.)—a fast acid Navy Blue for Wool.

FAST DIRECT BLUES, Pat'd. for Cotton and Mixed Goods Wool and Cotton, Silk and Cotton.

FAST DIAZOTABLE BLACKS, PAT'D.

Established 1834. H. G. JOHNSON, Proprietor.

Wm. G. Johnson Co.

Manufacturers of

DYEWOODS

Logwood Extracts, - - -
Ground and Bolted Camwoods
And other Fancy Woods. -

All Goods Warranted Uniform.

Long Distance Telephone. **UNCASVILLE, CONN.**

Fuller's Earth without Grit,

IMPORTED SOLELY BY

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Woolens washed with Patent Refined Fuller's Earth are much more durable and handle much softer than those cleansed by soaps and other means.

For practical proof of these facts address as above, or

H. N. GARRETT, A. M., INST. C. E.,
101 Sydney Place, . . . Bath, England.

Proprietor of the Midford Fuller's Earth Refining Works.

NASHOBA COMPANY, AYER, MASS.

MANUFACTURERS OF

TRADE— **FANKHAUSINE.** —MARK

A CLEANSING MORDANT FOR COTTON DYEING, PRINTING AND BLEACHING.

FANKHAUSINE Saves Time, Labor, Fuel and Dyestuffs, gives more even brighter, faster colors and softer goods.

By using FANKHAUSINE cotton is dyed directly without boiling out.

SAMPLE AND CATALOGUE UPON APPLICATION TO

NASHOBA COMPANY, - - AYER, MASS.

F. E. ATTEAUX & CO.,

Manufacturing Chemist.

Inventors and Manufacturers of Specialties for Wool, Cotton, Silk and Leather Dyers.

Importers of Aniline and Alizarine Colors, Dyestuff and Chemicals.

Our well-known specialties can **only** be furnished by us or through our authorized agent, W. W. HANNA, 135 No. Water St, Philadelphia.

OFFICE AND SALESROOM,

174 & 176 PURCHASE ST., - BOSTON.

WORKS, W. FIRST, D AND CYPHER STS., SOUTH BOSTON.

F. G. PAULY, Pres. I. J. MERRITT, Vice Pres. I. J. MERRITT, Jr., Treas.

Harway Dyewood & Extract Manufacturing Co.,

MANUFACTURERS OF

DYEWOODS, DYEWOOD EXTRACTS and LIQUORS, HAEMATINE

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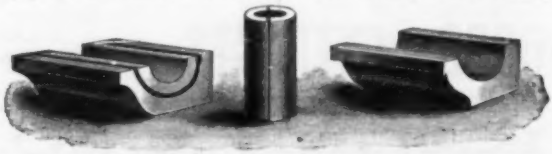

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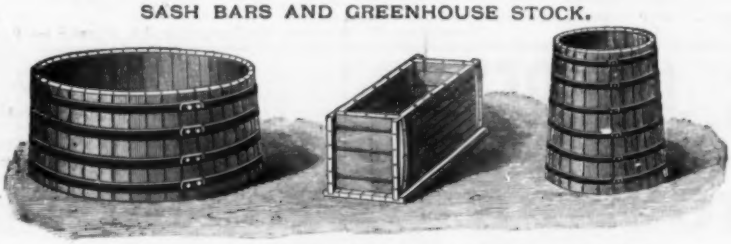

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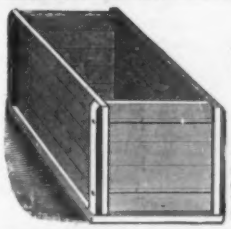

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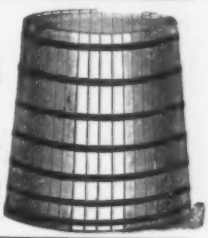

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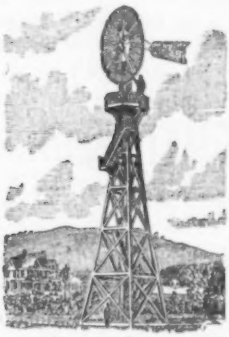

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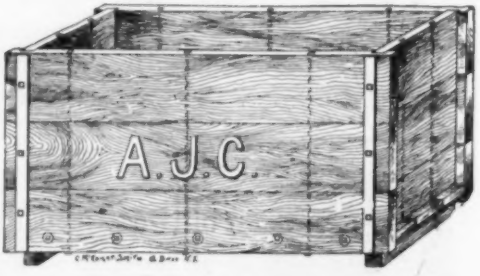

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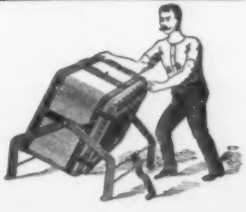

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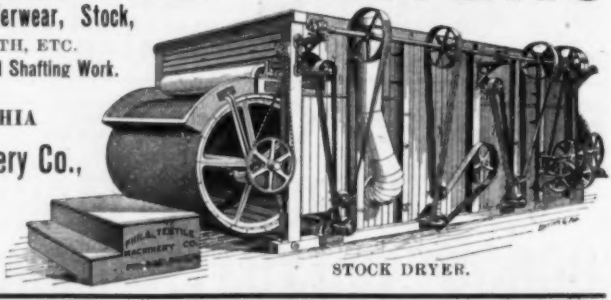

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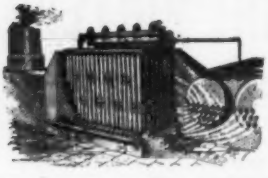

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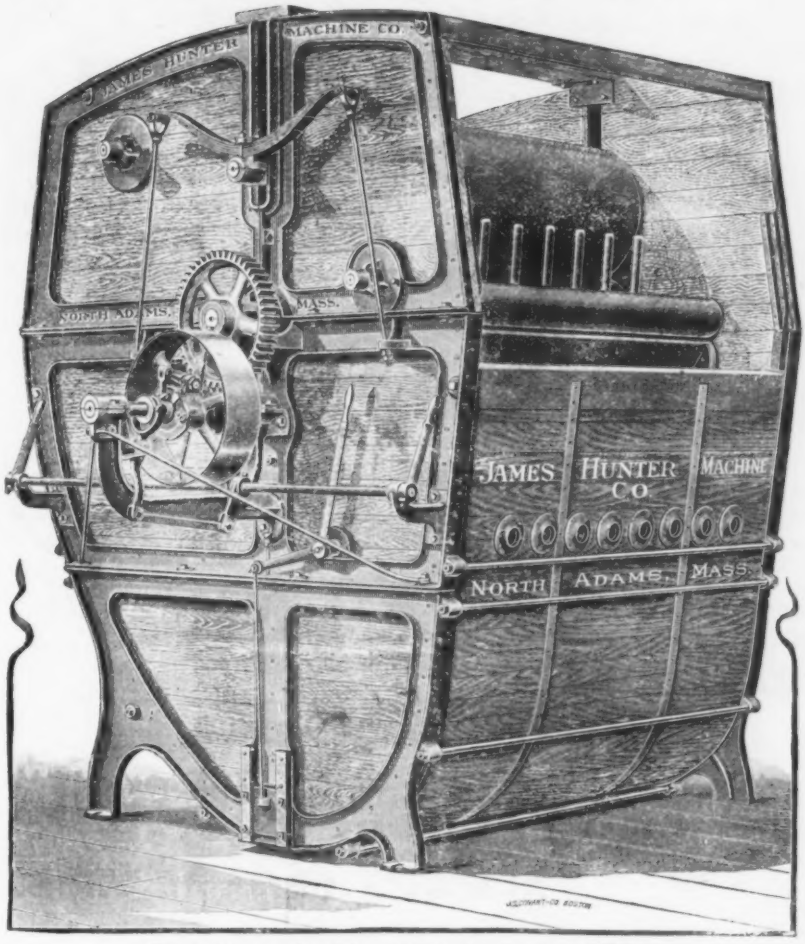

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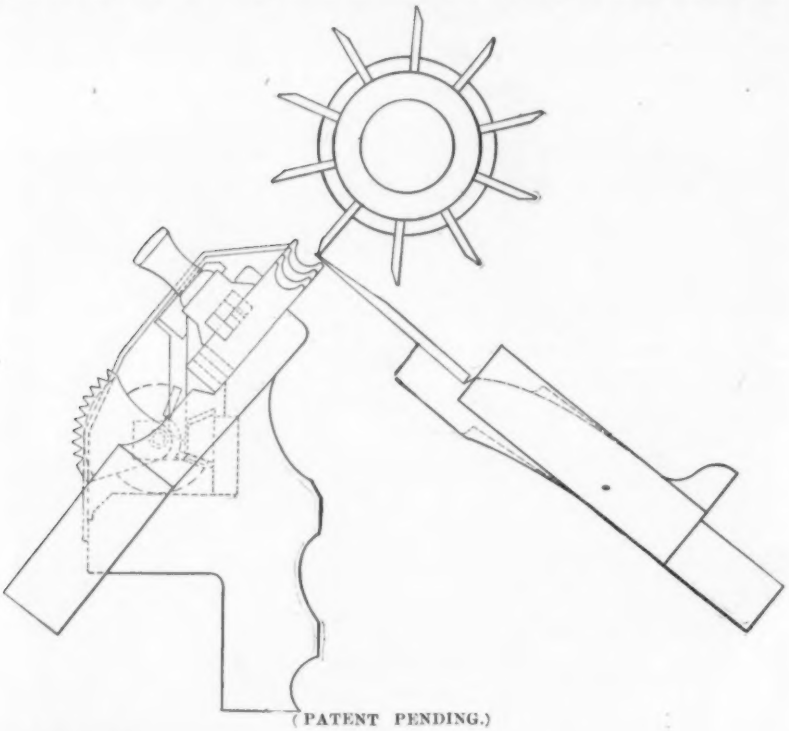

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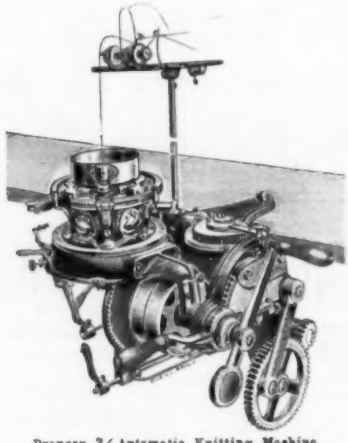

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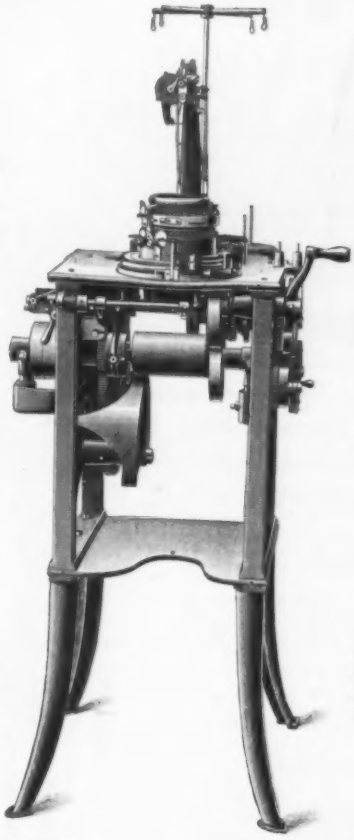

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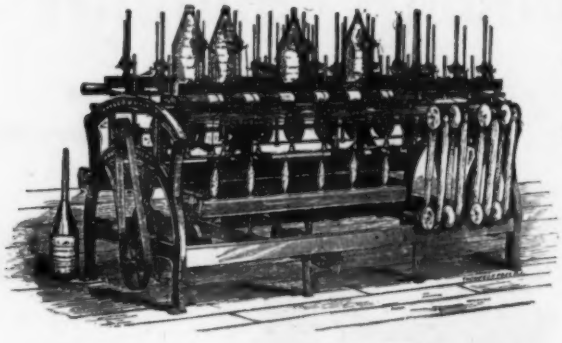

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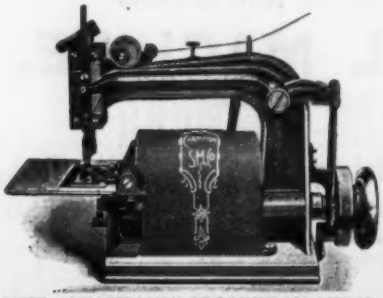

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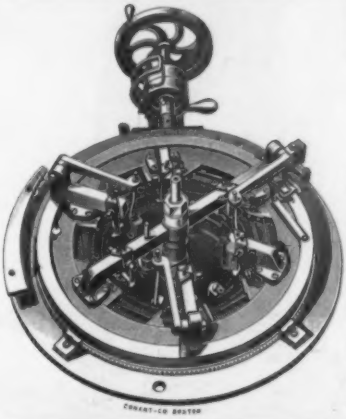

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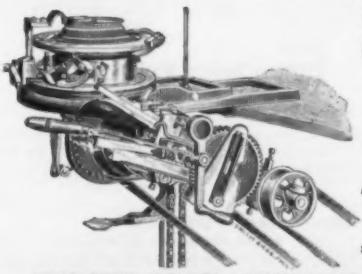

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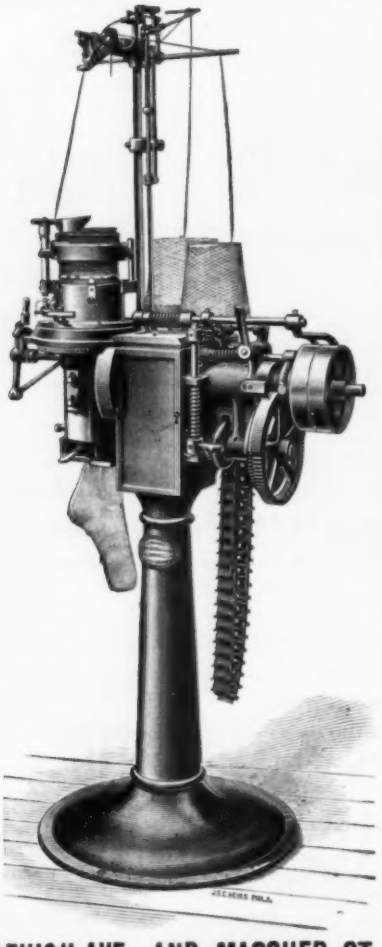

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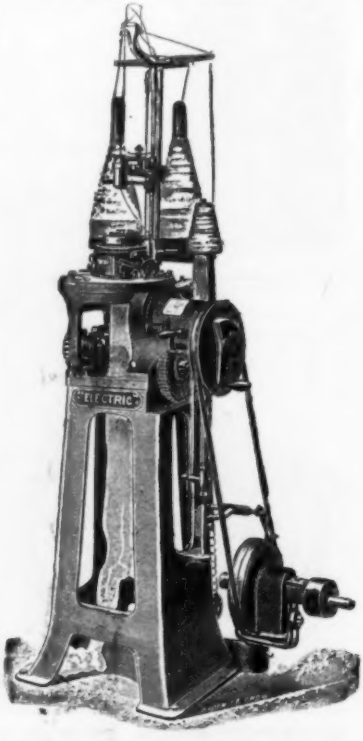

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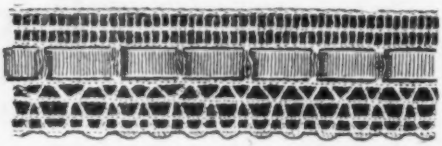
Lace  Edgings

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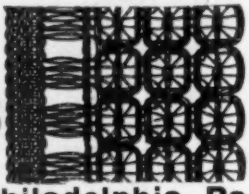

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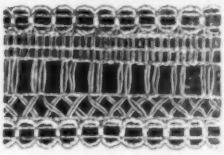

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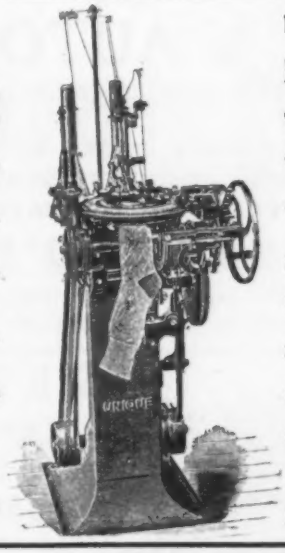

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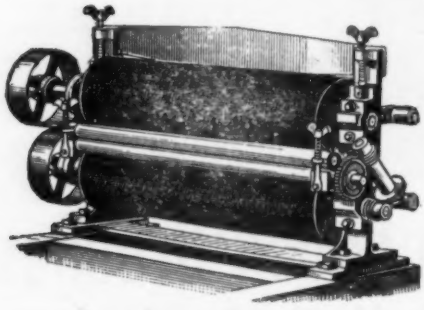

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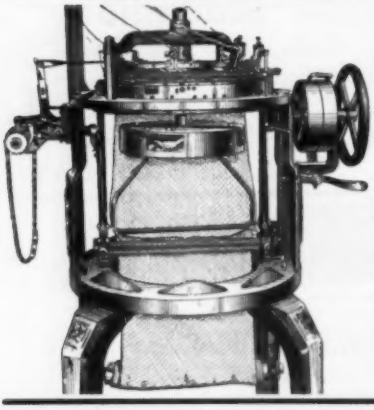

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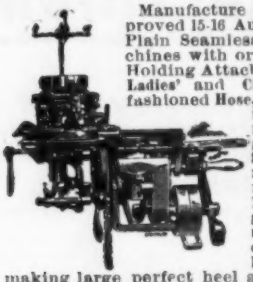

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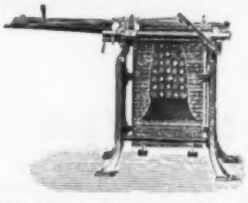

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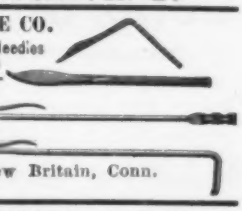

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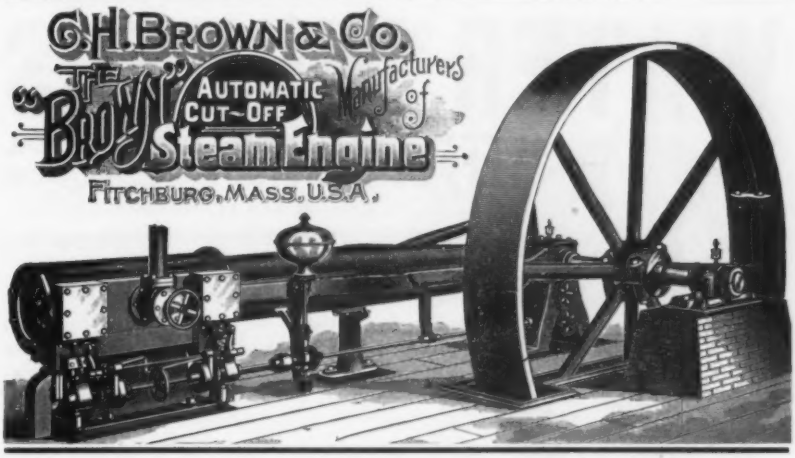

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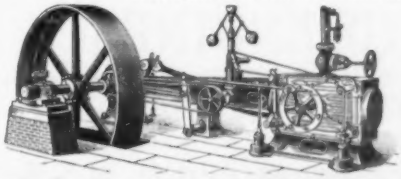

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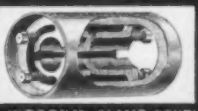

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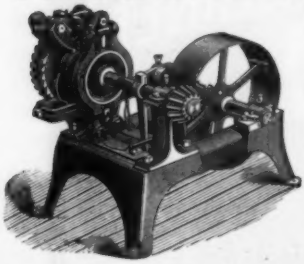

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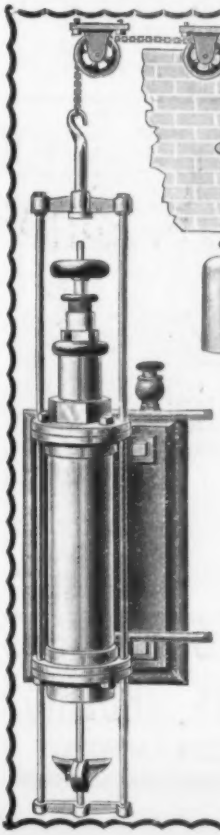

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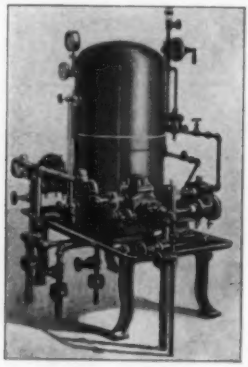

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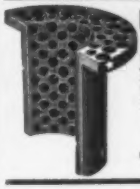

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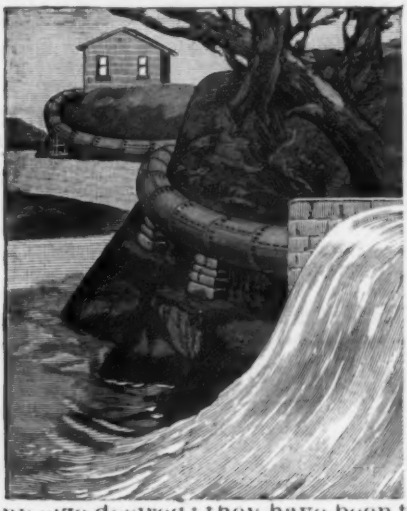

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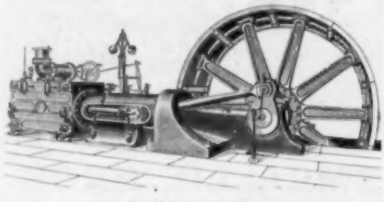

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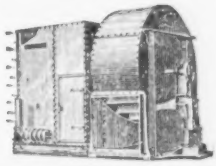

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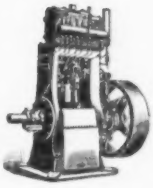

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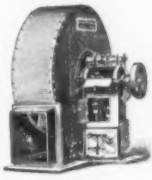

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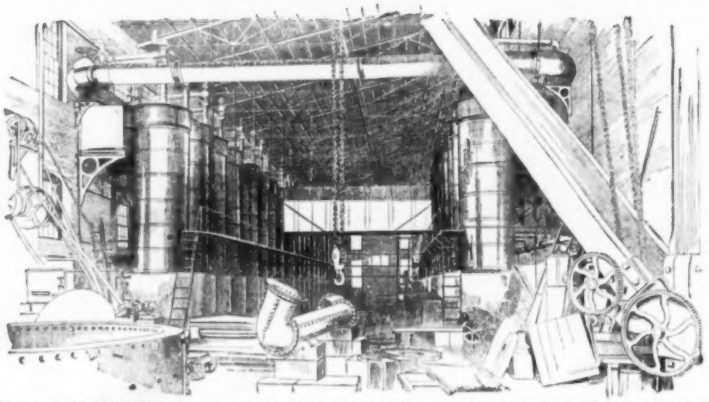

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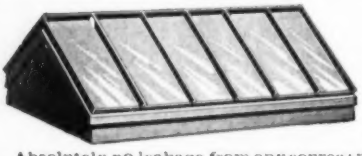

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